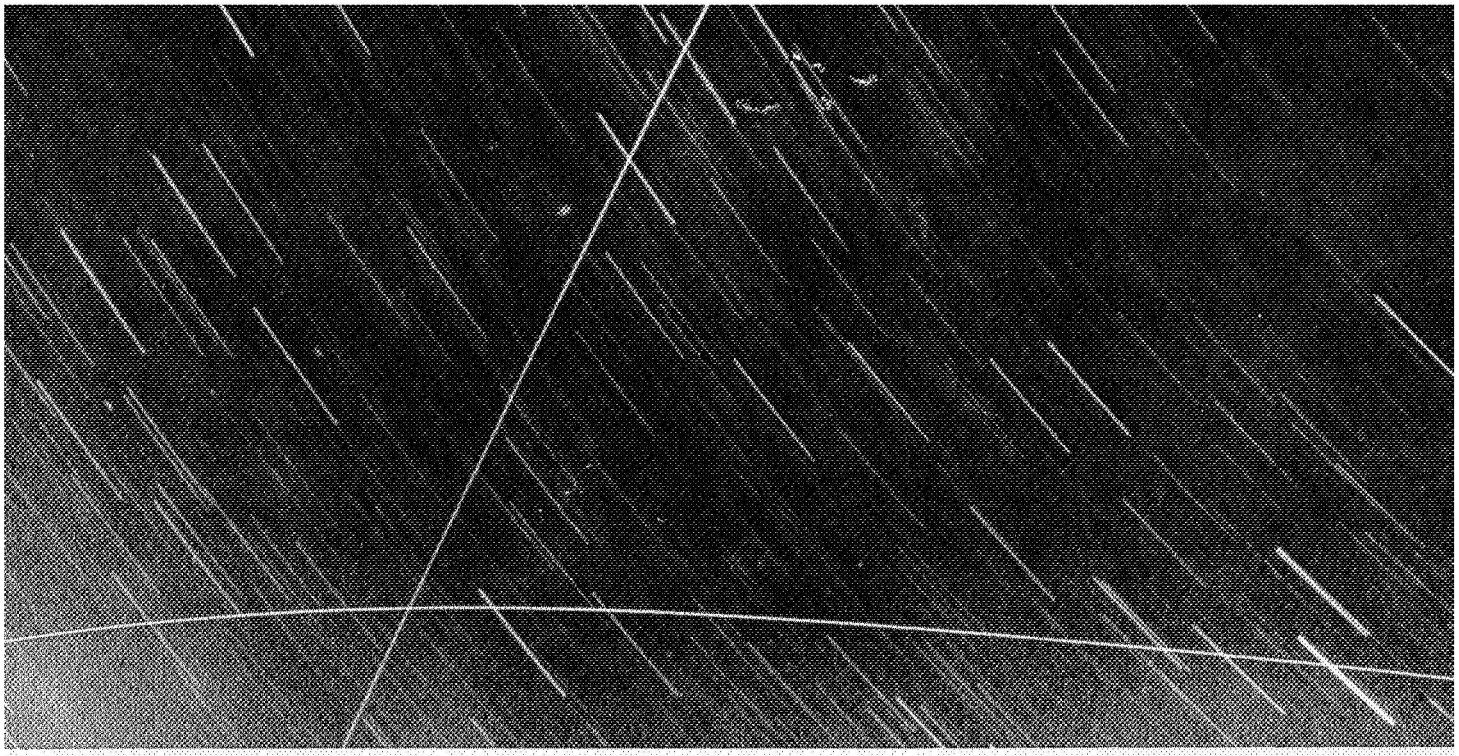

DATA CATALOG
NSSDC 68-09

CATALOG OF CORRELATIVE DATA

APRIL 1968

SUPERSEDES ALL PREVIOUS EDITIONS

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

NOTICE

Copies of all data announced in this Catalog will be made available to NASA personnel only. Other individuals must obtain ground correlative data from the appropriate source, i.e., World Data Center A, Air Force Cambridge Research Laboratories, observatories, and other scientific establishments. Sources for the listed data will be provided upon request.

All users may view the announced data in this Catalog at the facilities provided by the National Space Science Data Center.

NATIONAL SPACE SCIENCE DATA CENTER

CATALOG

OF CORRELATIVE DATA

NSSDC 68-09

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Supersedes all previous editions

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771

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INTRODUCTION

PURPOSE

The purpose of this Catalog of Correlative Data is to aid NASA users of ground correlative data by acquainting them with data presently available and to inform potential users of the data services provided by the National Space Science Data Center (NSSDC).

This Catalog is published semiannually in April and October. A companion volume, the Data Catalog of Satellite and Rocket Experiments lists data obtained from experiments conducted in the upper atmosphere and space by instruments aboard satellites, probes, and sounding rockets. The Data Catalog is published in January and July.

DATA COVERAGE, FORMAT, AND MEDIA

The Catalog of Correlative Data lists space science data obtained primarily by ground-based instruments and scientific facilities. The Catalog is divided into seven discipline-oriented sections, each introduced by a brief technical summary. Within the sections, the station lists are alphabetically arranged by location, then alphabetically by station name. The listings of available data are further organized by instrument or type of measurement, observatory/station, and date. Listed data are presented in tabular, graphical, or computer format, and are available on hard copy or microfilm, unless otherwise indicated in the data description. Descriptions of the instrumentation and the techniques used in reducing the data appear in Annals of the International Geophysical Year and in IQSY Notes.

DATA AVAILABILITY AND ORDERING PROCEDURES

Copies of data listed in this Catalog are available only to NASA personnel; other users must obtain the information directly from the appropriate source, i.e., World Data Center A, Air Force Cambridge Research Laboratories, and numerous other scientific establishments. Sources for the listed data will be provided upon request. When ordering, the type of data should be specified, as well as station, time intervals, and media (where applicable). All announced data are available for use at the facilities provided by NSSDC.

When a user requests data on magnetic tapes, he should provide additional information concerning his plans for using the data, e.g., what computers and

operating systems will be used. NSSDC will be happy to provide information concerning the services it can perform for any given data set.

When requesting data on magnetic tape, the user must specify whether he will:

1. Supply new tapes prior to the processing, or
2. Return the original NSSDC tapes after the data have been copied

NASA personnel may order data by:

1. Letter request
2. Data Request Form (two forms are included at the end of this Catalog)
3. Telephone request – Area Code 301 982-6695 or 982-2171

SPECIAL ORDERS

Occasionally, the need may arise for data not listed in the Catalog or not currently available at NSSDC. The Data Center will attempt to obtain any data requested, subject to appropriate approvals.

LOCATION

The Data Center is located in Building 26 at the Goddard Space Flight Center, Greenbelt, Maryland; the official address is given below.

National Space Science Data Center
Goddard Space Flight Center
Code 601
Greenbelt, Maryland 20771

Phone: Area Code 301 982-6695

ABBREVIATIONS

Abbreviations used throughout this Catalog are listed below. (Note that for units of measure the same abbreviation is used for both the singular and plural.)

A	angstrom unit
ADF	active dark filament
AFB	Air Force Base
AFCRL	Air Force Cambridge Research Laboratories
AFR	active filament region

APR	active prominence region
AWS	Air Weather Service
BCD	binary coded decimal
bpi	bits per inch
BSD	bright surge on disk
BSL	bright surge at limb
cm	centimeter
CMP	central meridian passage
CRPL	Central Radio Propagation Laboratory (Now ITSA)
db	decibel
deg	degree
DSD	dark surge on disk
ESSA	Environmental Science Services Administration
FM	frequency modulation
GSFC	Goddard Space Flight Center
HAO	High Altitude Observatory
hr	hour
IAU	International Astronomical Union
IAGA	International Association of Geomagnetism and Aeronomy
IGY	International Geophysical Year
IQSY	International Year of the Quiet Sun
ITSA	Institute for Telecommunication Sciences and Aeronomy
IUGG	International Union of Geodesy and Geophysics
lat	latitude
long.	longitude
MHz	Megahertz
min	minute
mm	millimeter
mo	month
MSC	Manned Spacecraft Center
NASA	National Aeronautics and Space Administration
NSSDC	National Space Science Data Center
SCNA	sudden increase in cosmic noise absorption
SEA	sudden enhancement of low-frequency atmospherics
sec	second
SES	sudden enhancement at very low frequency
SFD	sudden frequency deviation
SID	sudden ionospheric disturbance
SPA	sudden phase anomaly at very low frequency
SWF	shortwave fadeout
URSIGRAM	International Scientific Radio Union Telegram
UT	universal time
VHF	very high frequency
VLF	very low frequency
vs	versus
yr	year

PART I

ATMOSPHERIC PHYSICS

DATA DESCRIPTION (OZONE)

Parameters measured include total ozone content and vertical distribution vs location and time. The data usually consist of ozonagrams that give content versus altitude for scheduled observation times. These data are presented in both graphical and tabular formats. The basic observables are ozone content, pressure, temperature, humidity, and altitude; from these are derived other variables listed in the tables. These data are published in Ozonesonde Observations over North America, AFCRL 64-30 (Vol. I - Jan. 64, Vol. II - July 64, Vol. III - Aug. 65).

Listed below are observatories that have contributed ozone data:

Station	Geographic Lat	Geographic Long.
Albrook Field, Canal Zone (AWS)	9.0°N	79.6°W
Colorado State University, Fort Collins, Colorado	40.6°N	105.1°W
Eielson AFB, Fairbanks, Alaska (AWS)	64.8°N	147.9°W
Florida State University, Tallahassee, Florida	30.4°N	84.3°W
Fort Churchill, Manitoba (Canadian Met. Br.)	58.8°N	94.1°W
Goose Bay, Labrador (Canadian Met. Br.)	53.3°N	60.4°W
Grand Turk AFB, British West Indies	21.5°N	71.1°W
La Paz, Bolivia	16.5°S	68.0°W
L. G. Hanscom Field, Bedford, Massachusetts	42.5°N	71.3°W
Thule AFB, Greenland (AWS)	76.5°N	68.8°W
University of New Mexico, Albuquerque, New Mexico	35.0°N	106.6°W
University of Washington, Seattle, Washington	47.4°N	122.3°W
University of Wisconsin, Madison, Wisconsin	43.1°N	89.4°W

OZONAGRAMS

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
12-07-62		X											
12-10-62		X											
12-11-62		X											
12-12-62		X											
12-13-62		X											
12-14-62		X											
12-17-62		X											
12-18-62		X											
12-19-62		X											
01-02-63		X											
01-07-63						X							
01-09-63	X	X									X	X	
01-16-63		X	X								X	X	
01-19-63							X						
01-23-63		X					X			X	X		
01-29-63					X								
01-30-63	X	X		X	X	X					X	X	X
01-31-63							X						
02-06-63	X	X	X			X	X				X		
02-08-63		X										X	
02-10-63													X
02-13-63	X	X			X	X	X				X	X	
02-15-63												X	
02-20-63	X	X				X	X				X		X
02-21-63			X										
02-27-63	X	X	X		X	X	X				X	X	X

OZONAGRAMS (Continued)

STATION / DATE	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
03-06-63		X	X			X	X				X		
03-08-63				X									
03-13-63	X	X	X			X	X				X	X	
03-20-63	X	X	X			X					X	X	X
03-26-63		X											
03-27-63	X	X	X		X	X	X			X	X	X	
04-03-63	X	X	X	X	X	X				X			X
04-04-63										X			
04-10-63	X	X										X	
04-17-63	X		X			X	X				X		
04-24-63	X	X		X	X	X	X					X	
04-29-63	X	X		X	X	X	X			X	X		
04-30-63	X	X	X	X		X	X			X	X	X	
05-01-63	X	X	X		X	X	X				X		X
05-02-63	X	X		X	X	X	X				X		
05-03-63	X	X		X	X	X	X				X		X
05-04-63	X	X	X		X	X					X	X	
05-05-63	X	X				X	X				X	X	
05-06-63	X	X			X	X				X		X	
05-07-63	X	X	X		X	X	X				X	X	X
05-08-63	X	X	X	X	X		X				X	X	X
05-09-63	X	X	X		X	X	X					X	X
05-10-63	X	X	X		X	X					X	X	X
05-15-63	X	X	X		X	X					X	X	X
05-16-63				X									
05-22-63	X	X	X	X	X	X				X	X	X	X
05-29-63	X	X	X		X						X		X

OZONAGRAMS (Continued)

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
06-05-63	X	X	X	X	X	X					X	X	
06-10-63							X						
06-12-63	X	X	X	X	X	X	X				X	X	X
06-18-63				X									
06-19-63	X	X			X	X	X						
06-26-63	X	X		X	X	X					X		X
07-03-63	X	X	X		X	X				X	X		
07-09-63													X
07-10-63	X	X	X		X					X	X		
07-17-63	X	X			X		X				X		X
07-19-63				X									
07-20-63												X	
07-23-63						X							
07-24-63	X	X	X	X	X	X					X	X	X
07-25-63							X						
07-30-63						X							
07-31-63	X				X	X							X
08-07-63	X	X			X	X					X	X	X
08-14-63	X	X	X		X	X	X				X	X	X
08-15-63				X									
08-21-63	X			X	X	X	X				X	X	X
08-28-63	X				X	X					X	X	
08-29-63				X									

OZONAGRAMS (Continued)

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
09-04-63	X	X		X	X	X	X					X	X
09-05-63										X			
09-11-63	X	X	X	X	X	X	X				X	X	X
09-13-63									X				
09-15-63									X				
09-18-63	X	X	X		X	X	X			X	X	X	
09-19-63									X				
09-21-63									X				
09-22-63									X				
09-24-63		X											
09-25-63	X	X				X	X		X	X	X		X
09-26-63									X				
09-27-63									X				
09-30-63									X				
10-01-63		X							X				
10-02-63	X	X			X	X					X		X
10-03-63									X	X			
10-04-63									X				
10-09-63	X	X	X	X	X	X	X				X	X	
10-16-63	X	X		X	X	X	X				X		X
10-18-63		X											
10-21-63		X											
10-23-63	X	X		X	X	X	X			X	X	X	
10-24-63													X
10-30-63	X	X	X	X	X	X	X				X	X	

OZONAGRAMS (Continued)

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
11-06-63	X	X		X	X	X				X	X	X	
11-13-63		X			X	X					X	X	X
11-14-63							X						
11-20-63	X	X			X	X	X				X	X	
11-26-63				X									
11-27-63	X	X	X		X	X	X				X		X
12-04-63	X				X	X	X	X		X	X		
12-11-63	X	X			X	X				X	X	X	
12-16-63		X											
12-18-63	X	X	X	X				X				X	
12-24-63		X									X		
12-25-63	X												
12-26-63												X	
12-27-63			X										
12-31-63		X											
01-01-64	X		X									X	
01-08-64	X	X					X	X			X	X	X
01-13-64	X	X	X		X	X	X	X			X	X	
01-15-64	X	X		X	X	X	X	X			X	X	
01-17-64	X	X										X	
01-20-64	X	X			X	X	X	X				X	
01-21-64	X											X	
01-22-64	X	X		X	X	X	X	X		X		X	
01-23-64	X												
01-24-64	X	X			X			X		X			
01-25-64						X							
01-29-64	X	X			X	X		X		X			

OZONAGRAMS (Continued)

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
02-05-64		X	X		X	X					X		
02-06-64	X												
02-12-64	X	X	X	X		X	X	X		X		X	X
02-18-64		X											
02-19-64	X		X		X	X	X	X			X	X	X
02-20-64		X										X	
02-21-64		X											
02-26-64	X	X				X	X	X			X	X	
03-03-64							X			X			
03-04-64		X			X	X	X				X		
03-10-64				X			X						
03-11-64	X	X	X			X	X				X	X	X
03-14-64							X						
03-18-64	X	X	X			X	X				X	X	X
03-25-64	X	X	X	X	X	X	X						X
04-01-64	X	X	X									X	X
04-02-64		X											
04-08-64	X	X			X		X				X		
04-13-64	X	X	X	X	X	X	X	X			X		
04-15-64	X				X	X	X	X			X	X	
04-17-64	X	X	X	X	X			X		X	X		
04-18-64							X						
04-20-64	X	X	X				X	X			X	X	
04-22-64	X	X	X	X			X	X			X	X	
04-23-64												X	
04-24-64	X	X					X			X	X	X	
04-29-64		X		X		X							

OZONAGRAMS (Continued)

DATE \ STATION	ALBUQUERQUE	BEDFORD	CANAL ZONE	FAIRBANKS	FORT CHURCHILL	FORT COLLINS	GOOSE BAY	GRAND TURK	LA PAZ	MADISON	SEATTLE	TALLAHASSEE	THULE
05-06-64	X	X		X		X					X		
05-13-64		X		X		X	X	X			X	X	X
05-20-64	X	X		X	X	X	X	X		X	X	X	X
05-27-64	X	X	X			X	X				X	X	X
05-29-64							X						
06-03-64	X	X	X	X	X	X					X	X	X
06-04-64							X						
06-10-64	X	X		X	X	X					X		
06-17-64	X	X	X	X	X	X	X	X			X	X	
06-24-64	X	X	X	X	X	X	X	X			X	X	X
06-26-64	X												
06-29-64	X												
07-01-64	X	X		X	X	X	X	X		X		X	X
07-06-64	X												
07-08-64		X		X		X	X	X			X	X	
07-13-64	X	X	X	X		X	X	X			X	X	
07-15-64	X	X	X	X		X	X	X			X	X	X
07-17-64								X		X	X	X	X
07-20-64	X	X		X				X					X
07-22-64	X	X	X	X		X	X				X		X
07-24-64		X		X		X		X			X	X	X
07-27-64										X			
07-29-64	X			X	X	X						X	
08-05-64	X	X		X	X	X	X			X			X
08-11-64										X			
08-12-64	X	X	X	X							X		X
08-19-64	X	X	X			X					X	X	
08-26-64	X	X		X	X	X		X					

PART II

AURORAL OBSERVATIONS

DATA DESCRIPTION

The principal auroral observations are centered around the phenomenon of aurora borealis. Synoptic data include photographs from on-site cameras and visual observations. Additionally, photoelectric photometers are operated at different wavelengths (3914, 4278, 5577, and 6300 A). These data are presented in hourly mean values of absorption intensities at each wavelength. The visible observations are supported by observations using radar and radio techniques.

VISIBLE AURORA

A quarterly auroral index has been scaled from the recordings of the 5577-A line made by an auroral recorder that sweeps the geographic meridian once every 2.5 min. The index values have been scaled every 2.5 min, and the maximum values of three sweeps before and three sweeps after each quarter of the hour for five different latitude ranges have been tabulated. Available data are as listed.

Station	Geographic Lat	Geographic Long.	Data Available
Kiruna, Sweden	67.8°N	20.4°E	Jan. - Mar. 1959 Oct. - Dec. 1959 Jan. - Apr. 1963 Sept. 1963 - Apr. 1964 Sept. 1964 - Mar. 1965 Sept. 1965 - Mar. 1966

AURORAL RADAR ECHOES

A 19 MHz radar set is used to determine auroral backscatter. The data on 35-mm film are photographed directly from the Plan Position Indicator oscilloscope. The auroral, field-aligned, and sporadic E and F layer returns are read directly from the film and are recorded on graph paper. The abscissa

indicates the time in hourly intervals for each 24-hr period. The ordinate is divided into six equal sections representing six successive days. Each daily section shows range and azimuth. Field-aligned auroral returns are indicated by short parallel lines normal to the time axis. Data are available for the stations and time periods listed below.

Station	Geographic Lat	Geographic Long.	Data Available
College, Alaska, USA	64.9°N	147.8°W	July 1959 - Dec. 1961
Kiruna, Sweden	67.8°N	20.4°E	Jan. 1962 - July 1964 July - Dec. 1965
Plum Island, Mass., USA	41.0°N	73.0°W	Jan. 1964 - Dec. 1965

OBLIQUE VHF AURORAL REFLECTIONS

Auroral-propagated VHF signals from the Swedish FM-broadcasting transmitter at Vannas (88.5 MHz) are recorded continually by Kiruna. These data are presented as daily average values of amplitude changes expressed in percent for each month. Additional data are presented as daily averages recorded as amplitude vs time. Available data are listed below:

Station	Geographic Lat	Geographic Long.	Data Available
Kiruna, Sweden	67.8°N	20.4°E	Jan. - Dec. 1959 Jan. 1961 - June 1963 Aug. 1963 - July 1964 Jan. 1965 - Feb. 1966

PART III

COSMIC-RAY DATA

DATA DESCRIPTION

The cosmic-ray data listed in this Catalog represent synoptic data obtained from ground-level monitors that detect variations in cosmic-ray intensity. These detectors include meson telescopes, neutron monitors, ionization chambers, and underground telescopes.

All of the data available are presented as hourly or bi-hourly values (station-dependent) of scaled count rate vs time. The neutron monitor data have been corrected to the mean atmospheric pressure at the station. The meson intensity data have been corrected for both temperature and pressure, with temperature coefficients derived from the apparatus used.

A list of cosmic-ray observatories precedes the data listing.

STATION LIST

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
ARCTIC OCEAN					
HEISS ISLAND	USSR	80.6N	58.1E	71.3N	155.3E
PACIFIC OCEAN, SOUTH					
MACQUARIE ISLAND	AUSTRALIA	54.5S	158.9E	61.1S	243.1E
ANTARCTICA					
CAPE HALLETT	NEW ZEALAND/USA	72.3S	170.2E	74.7S	278.2E
ELLSWORTH	ARGENTINA/USA	77.7S	41.1W	66.9S	14.2E
MAWSON	AUSTRALIA	67.6S	62.9E	73.1S	103.0E
MIRNY	USSR	66.6S	93.0E	77.0S	146.8E
SYOWA BASE	JAPAN	69.0S	39.6E	69.7S	77.4E
WILKES	AUSTRALIA/USA	66.3S	110.5E	77.8S	179.0E
ARGENTINA					
BUENOS AIRES	ARGENTINA	34.6S	58.5W	23.6S	9.4E
CORDOBA	ARGENTINA	31.4S	64.2W	19.8S	4.3E
MINA AGUILAR	ARGENTINA	23.1S	65.7W	11.7S	3.1E
USHUAIA	ARGENTINA	54.8S	68.3W	43.2S	0.8E
AUSTRIA					
HAFELEKAR	AUSTRIA	47.3N	11.4E	48.0N	93.0E
AUSTRALIA					
HOBART	AUSTRALIA	42.5S	147.2E	51.7S	224.6E
SYDNEY	AUSTRALIA	33.6S	151.1E	42.4S	226.5E
BOLIVIA					
MT. CHACALTAYA	BOLIVIA	16.3S	68.2W	4.9S	0.8E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
BRAZIL					
RIO DE JANEIRO	BRAZIL	22.9S	43.2W	12.5S	24.2E
CANADA					
CALGARY	CANADA	51.5N	114.1W		
CHURCHILL	CANADA	58.8N	94.1W	68.8N	322.5E
DEEP RIVER	CANADA	46.1N	77.5W	57.4N	349.0E
INUVIK	CANADA	68.2N	133.7W		
OTTAWA	CANADA	45.4N	75.7W	57.0N	351.3E
RESOLUTE BAY	CANADA	74.7N	94.9W	83.1N	287.7E
SULPHUR MOUNTAIN	CANADA	51.1N	115.5W	57.9N	300.4E
ENGLAND					
HERSTMONCEUX	UNITED KINGDOM	50.9N	0.3E	53.6N	83.8E
LEEDS	UNITED KINGDOM	53.8N	1.5W	56.7N	83.6E
LONDON	UNITED KINGDOM	51.5N	0.1W	54.3N	83.7E
FRANCE					
PIC-DU-MIDI	FRANCE	43.0N	0.1E	46.0N	80.2E
GERMAN DEMOCRATIC REPUBLIC					
HALLE	GERMAN DEMOCRATIC REPUBLIC	51.5N	12.0E	51.8N	95.5E
KUHLUNGSBORN	GERMAN DEMOCRATIC REPUBLIC	54.1N	11.8E	54.4N	95.8E
GERMAN FEDERAL REPUBLIC					
FREIBURG	GERMAN FEDERAL REPUBLIC	48.0N	7.8E	49.3N	89.9E
KIEL	GERMAN FEDERAL REPUBLIC	54.3N	10.1E	54.9N	95.5E
LINDAU/HARZ	GERMAN FEDERAL REPUBLIC	51.7N	10.1E	52.4N	93.9E
MUNCHEN	GERMAN FEDERAL REPUBLIC	48.1N	11.6E	48.8N	93.7E
ZUGSPITZE	GERMAN FEDERAL REPUBLIC	47.4N	10.9E	48.2N	92.7E
GREENLAND					
GODHAVN	DENMARK/USA	69.3N	53.3W	79.8N	32.5E
THULE	DENMARK/USA	76.5N	68.8W	88.1N	1.1E
HUNGARY					
BUDAPEST	HUNGARY	47.5N	19.0E	46.7N	100.4E
INDIA					
AHMADABAD	INDIA	23.0N	72.6E	13.9N	143.9E
DARJEELING	INDIA	27.1N	88.3E	16.4N	160.0E
HOWRAH	INDIA	22.6N	88.3E	11.9N	159.7E
ITALY					
BOLOGNA	ITALY	44.6N	11.4E	45.2N	91.9E
ROME	ITALY	41.9N	12.5E	42.5N	92.0E
JAPAN					
MT. NORIKURA	JAPAN	36.1N	137.6E	25.6N	203.5E
SAPPORO	JAPAN	43.0N	141.4E	33.0N	206.1E
TOKYO (ITABASHI)	JAPAN	35.8N	139.7E	25.5N	205.5E
TOKYO (MABASHI)	JAPAN	35.7N	139.7E	25.4N	205.5E
MEXICO					
CIUDAD UNIVERSITY	MEXICO	19.3N	99.2W	29.2N	327.2E
NETHERLANDS					
AMSTERDAM	NETHERLANDS	52.4N	4.9E	53.9N	89.3E
NERA	NETHERLANDS	52.2N	5.1E	53.9N	89.3E
NEW ZEALAND					
INVERCARGILL	NEW ZEALAND	46.4S	168.3E	51.2S	250.8E
WELLINGTON	NEW ZEALAND	41.3S	174.8E	46.5S	253.9E
PERU					
HUANCAYO	PERU/USA	12.1S	75.3W	0.6S	353.8E
REPUBLIC OF SOUTH AFRICA					
HERMANUS	REPUBLIC OF SOUTH AFRICA	34.4S	19.2E	33.3S	80.5E
SWEDEN					
KIRUNA	SWEDEN	67.8N	20.4E	65.3N	115.9E
MURCHISON BAY	SWEDEN	80.1N	18.3E	75.0N	137.5E
UPPSALA	SWEDEN	59.8N	17.6E	58.6N	105.9E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
SWITZERLAND					
JUNGFRAUJOCK	SWITZERLAND/GER. DEM. REP.	46.6N	7.9E	47.9N	90.7E
UGANDA					
KAMPALA (MAKERERE)	UGANDA	0.3N	32.6E	2.0S	101.4E
UNITED STATES OF AMERICA					
BERKELEY, CALIFORNIA	USA	37.9N	122.3W	44.2N	299.6E
CHICAGO, ILLINOIS	USA	41.8N	87.7W	52.6N	336.8E
CLIMAX, COLORADO	USA	39.4N	106.2W	48.1N	315.5E
COLLEGE, ALASKA	USA	64.9N	147.8W	64.7N	256.5E
DALLAS, TEXAS	USA	32.8N	96.8W	43.0N	327.7E
DURHAM, NEW HAMPSHIRE	USA	43.1N	70.9W		
FREDERICKSBURG, VIRGINIA	USA	38.2N	77.4W	49.6N	349.9E
HONOLULU, HAWAII	USA	21.3N	158.1W	21.0N	266.4E
LINCOLN, NEBRASKA	USA	40.8N	96.7W	50.8N	327.9E
MT. WASHINGTON, N.H.	USA	44.3N	71.3W	55.8N	357.0E
NORTHFIELD, MINNESOTA	USA	44.5N	93.1W	54.6N	329.4E
USSR					
ALMA-ATA	USSR	43.3N	76.9E	33.5N	150.8E
KRASNAYA PAKHRA (MOSCOW)	USSR	55.5N	37.3E	50.8N	120.5E
MOSCOW UNIVERSITY	USSR	55.7N	37.6E		
MURMANSK	USSR	69.0N	33.0E	64.1N	126.5E
SVERDLOVSK	USSR	56.7N	61.1E	48.5N	140.7E
TBILISI	USSR	41.7N	44.8E	36.3N	122.0E
TIKSI BAY	USSR	71.6N	129.0E	60.4N	191.4E
YAKUTSK	USSR	62.0N	129.7E	51.0N	193.8E
ZUI (IRKUTSK)	USSR	52.5N	104.0E	41.1N	174.4E

SUPER NEUTRON MONITOR

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
CALGARY 51.5N	114.1W	1964	XXX	XXX	XXX	XXX
		1965	XXX	XX-		
CHURCHILL 58.8N	94.1W	1964		XXX	XXX	X--
DALLAS 32.8N	96.8W	1964	XXX	XXX	XXX	X--

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
DEEP RIVER 46.1N	77.5W	1964				--X
		1965	XXX	XXX	XX-	
DURHAM 43.1N	70.9W	1964			XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX		
INUVIK 68.2N	133.7W	1964			XXX	XXX
SULPHUR MOUNTAIN 51.1N	115.5W	1964	XXX	XXX	-XX	XXX
		1965	XXX	XXX		

STANDARD NEUTRON MONITOR

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
AHMADABAD 23.0N	72.6E	1964	XXX	XXX		
ALMA-ATA 43.3N	76.9E	1960		--X	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XX-		
		1964			XXX	XXX
BERKELEY 37.9N	122.3W	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XX-	
BUENOS AIRES 34.6S	58.5W	1957				XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XX-	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XX-			
CAPE HALLETT 72.3S	170.2E	1962				XXX
CHICAGO 41.8N	87.7W	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	XXX	XXX		
CHURCHILL 58.8N	94.1W	1957		--X	XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
CLIMAX 39.4N	106.2W	1957		--X	X-X	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	XXX	XXX		
COLLEGE 64.9N	147.8W	1957		--X	XX-	XX-
		1958	XXX	XXX	X-X	XXX
		1959		--X	X--	
		1960	-XX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XX-
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX			
CORDOBA 31.4S	64.2W	1964			XXX	XXX
DEEP RIVER 46.1N	77.5W	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
DURHAM 43.1N	70.9W	1964			XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	XXX	XXX		
ELLSWORTH 77.7S	41.1W	1959	--X	XXX	XXX	XXX
FREIBURG 48.0N	7.9E	1957		XXX	XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
HEISS ISLAND 80.6N	58.1E	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1963			XXX	XXX

STANDARD NEUTRON MONITOR (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HERMANUS		1957		--X	XXX	XXX
34.4S	19.2E	1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XX-		
HERSTMONCEUX		1957			XXX	XXX
50.9N	0.3E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX		
HONOLULU		1957			XXX	XXX
21.3N	158.1W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	X--	
HUANCAYO		1957		--X	XXX	XXX
12.1S	75.3W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX		
INVERCARGILL		1958	XX-			XXX
46.4S	168.3E	1959	XXX	XXX	XXX	XXX
		1960	XXX			
KAMPALA		1957				XXX
0.3N	32.6E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1963	XXX	XX-	-XX	XXX
		1964	XXX		XXX	XXX
		1965	X--			
KIEL		1964	X-X	X--	--X	XXX
54.3N	10.1E	1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	X-X	XXX	XX-	
KIRUNA		1957	XXX	XXX	XXX	XXX
67.8N	20.4E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XX-	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KRASNAYA PAKHRA		1958	XXX	XXX	XXX	
55.5N	37.3E	1959	-X-	XXX	XXX	XXX
		1960	XXX		-XX	XXX
		1961	XX-	--X	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	X--		
		1964	XXX	XXX	XXX	XXX
KUHLUNGSBORN		1964	XXX	XXX	X--	
54.1N	11.8E					
LEEDS		1957			XXX	XXX
53.8N	1.5W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
LINCOLN		1957			XXX	XXX
40.8N	96.7W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
LINDAU/HARZ		1957			XXX	XXX
51.7N	10.1E	1958	XXX	XXX	XXX	XXX
		1959	XXX	-XX	XXX	X-X
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	X--
		1964	XXX	XXX	XXX	XXX
		1965	XX-			
		1966	--X		XXX	XXX
		1967	XXX			
LONDON		1957			XX-	XXX
51.5N	0.1W	1958	XXX	XXX	XXX	XXX
		1960			-XX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	X--		

STANDARD NEUTRON MONITOR (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
MINA AGUILAR		1957				XXX
23.1S	65.7W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX		XXX	XXX
		1965	XXX			
MIRNY		1960	XXX	XXX	XXX	XXX
66.6S	93.0E	1961	XXX	XXX	XXX	XXX
		1962	-XX	XXX	XXX	XXX
MT. CHACALTAYA		1963			XXX	XXX
16.3S	68.2W					
MT. NORIKURA		1957			XXX	XXX
36.1N	137.6E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	-XX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XX-			
MT. WASHINGTON		1957			XXX	XXX
44.3N	71.3W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	XXX	XXX		
MUNCHEN		1957			XXX	XXX
48.1N	11.6E	1958	XXX	XXX	XXX	XXX
		1959	X--	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	X--		

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
MURCHISON BAY		1957			-XX	XXX
80.1N	18.3E	1958	XXX	XXX	XX-	
		1959	XXX	XXX	XXX	XXX
MURMANSK		1958				--X
69.0N	33.0E	1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	X-X	XXX	XXX	XXX
		1963	XXX	XXX		
NORTHFIELD		1958	XXX	XXX	XXX	XXX
44.5N	93.1W					
OTTAWA		1957		--X	XXX	XXX
45.4N	75.7W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
RESOLUTE BAY		1957		--X	XXX	XXX
74.7N	94.9W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
RIO DE JANEIRO		1957				-XX
22.9S	43.2W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
ROME		1958	XXX	XXX	XXX	XXX
41.9N	12.5E	1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX		
		1964	XX-			

STANDARD NEUTRON MONITOR (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SULPHUR MOUNTAIN		1957		--X	XXX	XXX	UPPSALA		1957			XXX	XXX
51.1N	115.5W	1958	XXX	XXX	XXX	XXX	59.8N	17.6E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX			1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX			1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX			1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX			1962	XXX	XXX	XXX	XXX
		1963	-XX	XXX	XXX	XXX			1963	XXX	XXX	XX-	
		1964	XXX	XXX	X--								
							USHUAIA		1957				XXX
SYDNEY		1957			XXX	XXX	54.8S	68.3W	1958	XXX	XXX	XX-	XXX
33.6S	151.1E	1958	XXX	XXX	XXX	XXX			1959	XXX	-X-	-XX	XXX
		1959	XXX	XXX	XXX	XXX			1962		XXX	XXX	XXX
									1964	XXX	XXX	XXX	XXX
									1965	X--			
SYOWA BASE		1961	XXX	XXX	XXX	XXX							
69.0S	39.6E												
							YAKUTSK		1960	XXX	XXX	XXX	XXX
							62.0N	129.7E	1961	XXX	XXX	XXX	XXX
TBILISI		1961	--X	XX-					1964	XXX	XXX	XXX	XXX
41.7N	44.8E	1964	XXX	XXX	XXX	XXX							
							ZUGSPITZE		1957	XXX	XXX	XXX	XXX
THULE		1957			-XX	XXX	47.4N	10.9E	1958	XXX	XXX	XXX	XXX
76.5N	68.8W	1958	XXX	XXX	XXX	XXX			1959	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX			1960	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX			1961	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX			1962	XXX	XXX	XXX	X--
		1962	XXX	XXX	XXX	XXX							
		1963	XXX	XXX	XXX	XXX							
		1964	XXX	XXX	XXX	XXX	ZUI (IRKUTSK)		1960	XXX	XXX	XXX	XX-
		1966	XXX	XXX	XXX	XXX	52.5N	104.0E	1961	--X	XXX	XXX	XXX
									1964	XXX	XXX	XXX	XXX

DUPLEX NEUTRON MONITOR

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HALLE 51.5N	11.9E	1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX		
HOBART 42.5S	147.2E	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
JUNGFRAUJOCK 46.6N	7.9E	1958				XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	-XX	-XX
		1962	XXX	XXX	XXX	--X
		1963	--X	XXX	XXX	XXX
		1964	XXX			
KIEL 54.3N	10.1E	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
LINDAU/HARZ 51.7N	10.1E	1963		-XX	X--	
MAWSON 67.6S	62.9E	1957			XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX		
NERA 52.2N	5.1E	1958			XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XX-	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	X--
PIC-DU-MIDI 43.0N	0.1E	1957			-XX	XXX
		1958	XX-		-XX	XXX
		1959	XXX	XXX	XXX	XXX

TRIPLEX NEUTRON MONITOR

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HOBART 42.5S	147.2E	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XX-
MAWSON 67.6S	62.9E	1963				XXX
		1964	XXX	XXX	XXX	XXX
		1965	XX-			
WILKES 66.3S	110.5E	1962	--X	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
		1965	XX-			

IONIZATION CHAMBER

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ALMA-ATA		1960		--X	XXX	XXX
43.3N	76.9E	1962	XXX	XXX		
AMSTERDAM		1957			XXX	XXX
52.4N	4.9E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XX-	XXX	XX-
CIUDAD UNIV.		1957			XXX	XXX
19.3N	99.2W	1958	XXX	XXX	XXX	XXX
DEEP RIVER		1957			XXX	-XX
46.1N	77.5W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	X--	
FREDERICKSBURG		1957			XXX	XXX
38.2N	77.4W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	X--			
GODHAVN		1957			XXX	XXX
69.3N	53.3W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	X--	
HAFELEKAR		1962		--X	XXX	XXX
47.3N	11.4E	1963	XXX			
HALLE		1957			XXX	XXX
51.5N	11.9E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
HOWRAH		1957			XXX	XXX
22.6N	88.3E	1958	XXX	XXX	XXX	XXX
HUANCAYO		1957			XXX	XXX
12.1S	75.3W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KRASNAYA PAKHRA		1957			XXX	XXX
55.5N	37.3E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XX-
		1963	XXX	X--		
KUHLUNGSBORN		1957			XXX	XXX
54.1N	11.8E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	X--	
MIRNY		1957		--X	XXX	XXX
66.6S	93.0E	1958	XXX	X--		
		1959	XXX	XXX	XXX	XXX
		1960	X-X	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	--X	XXX	XXX	XXX
MT. NORIKURA		1957			XXX	XXX
36.1N	137.6E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	X-X	XXX	XXX
		1965	XX-			
SAPPORO		1957			XXX	XXX
43.0N	141.4E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
SVERDLOVSK		1957			-XX	XXX
56.7N	61.1E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XX-		
		1964	XXX	XXX	XXX	XXX
SYOWA BASE		1957			XXX	XXX
69.0S	39.6E	1958	X--			

IONIZATION CHAMBER (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TBILISI		1957				XXX
41.7N	44.8E	1958	XX-	XXX	XX-	
		1959				-XX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX		
		1964				-XX
TIKSI BAY		1957				--X
71.6N	129.0E	1958	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX		
		1962	XXX	XXX	XXX	X-X
		1964	XXX	XXX	XXX	X--
TOKYO (ITABASHI)		1957			XXX	XXX
35.8N	139.7E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	--X	XXX	XXX
		1965	XX-			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TOKYO (MABASHI)		1959		-XX	XXX	XXX
35.7N	139.7E	1960	XXX	XXX	XXX	XXX
		1961	XXX	X--	XXX	XX-
YAKUTSK		1957			XXX	XXX
62.0N	129.7E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
ZUI (IRKUTSK)		1960	XXX	XXX	XXX	XX-
52.5N	104.0E					

CUBICAL MESON TELESCOPE

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ALMA-ATA		1962	XXX	XXX		
43.3N	76.9E					
BOLOGNA		1958	XXX	XXX		
44.6N	11.4E					
CHURCHILL		1957			XXX	XXX
58.8N	94.1W	1958	XXX	XX-	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XX-	X--		XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
DARJEELING		1957			XXX	XX-
27.1N	88.3E					
HAFELEKAR		1962		--X	XXX	XXX
47.3N	11.4E	1963	XXX			
HEISS ISLAND		1960	XXX	XXX	XXX	XXX
80.6N	58.1E	1961	XXX	XXX	XXX	XXX
		1963			XXX	--X

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HERMANUS		1957		--X	XXX	XXX
34.4S	19.2E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XX-		
HERSTMONCEUX		1957			XXX	XXX
50.9N	0.3E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
KAMPALA		1957			XXX	XXX
0.3N	32.6E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
KIEL		1957			XXX	XXX
54.3N	10.1E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	X-X	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	X--	--X	X--	
		1967	--X	-XX	X--	

CUBICAL MESON TELESCOPE (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KIRUNA		1956				-XX
67.8N	20.4E	1957	XXX	XXX	XXX	XXX
		1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
KRASNAYA PAKHRA		1957		--X	XXX	XXX
55.5N	37.3E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XX-	XXX	X-X
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	X--		
		1964	XXX	XXX	XXX	XXX
KUHLUNGSBORN		1957			XXX	XXX
54.1N	11.8E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XX-	
		1964	XXX	XXX	X--	
LINDAU/HARZ		1957			XXX	XXX
51.7N	10.1E	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	X-X
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX
LONDON		1957			XXX	XXX
51.5N	0.1W	1958	XXX	XXX	XXX	XXX
		1961			X--	
MACQUARIE ISLAND		1957			XXX	XXX
54.5S	158.9E	1958	XXX	XXX	XXX	XXX
		1959	XX-			
MOSCOW UNIV.		1960	XXX	XXX	XXX	XXX
55.7N	37.6E	1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	X--		
OTTAWA		1957		--X	XXX	XXX
45.4N	75.7W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
RESOLUTE BAY		1957		--X	XXX	XXX
74.7N	94.9W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
ROME		1958	XXX	XXX	XXX	XXX
41.9N	12.5E	1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX			
SULPHUR MOUNTAIN		1957			XXX	XXX
51.1N	115.5W	1958	XXX	XXX	XXX	XXX
		1959	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	XXX	XXX	
		1965	XX-			
SYOWA BASE		1961			XXX	XXX
69.0S	39.6E					
TBILISI		1960	-XX	XXX	XXX	XXX
41.7N	44.8E	1961	XXX	XXX		
		1964	XXX	XX-	XXX	XXX
THULE		1958	XXX	XXX	XXX	XXX
76.5N	68.8W	1959	XXX	XXX	XXX	XX-
		1960	--X	XXX	XXX	XXX
		1961	XXX	XXX	XXX	
		1962	XXX	XXX		
TOKYO (ITABASHI)		1957			XXX	XXX
35.8N	139.7E	1958	XXX	XXX	XXX	XXX
		1959	-XX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	XXX	XXX
		1963	XXX	XXX	XXX	XXX
		1964	XXX	X-X	XXX	XXX
		1965	XX-			
UPPSALA		1962	XXX	XXX	XXX	XXX
59.8N	17.6E	1963	XXX	XXX	XXX	XXX
WILKES		1958	X-X	-XX	XXX	XXX
66.3S	110.5E					
YAKUTSK		1958			XXX	XXX
62.0N	129.7E	1960	XXX	XXX	XXX	XXX
ZUI (IRKUTSK)		1960	XXX	XXX	-XX	XX-
52.5N	104.0E	1961	--X	XXX	XXX	XXX
		1964	XXX	XXX	XXX	XXX

NARROW-ANGLE MESON TELESCOPE

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
WELLINGTON 41.3S	174.8E	1964	X--	-X-	X--								

WIDE-TOTAL TELESCOPE

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TOKYO (ITABASHI) 35.8N	139.7E	1961	XXX	XXX	XXX	XXX							

UNDERGROUND TELESCOPE

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
BUDAPEST 47.5N	19.0E	1961	X--				MOSCOW UNIV. 55.5N	37.3E	1964	XXX	XXX	X--	XXX
KRASNAYA PAKHRA - 55.5N	37.3E	1958	-XX	-XX	XXX	XXX	YAKUTSK 62.0N	129.7E	1957			XXX	XXX
		1959	XXX	XXX	XXX	XXX			1958	XXX	XXX		
									1959	XXX	XXX	XXX	XXX
									1964	XXX	XXX	X-X	XXX

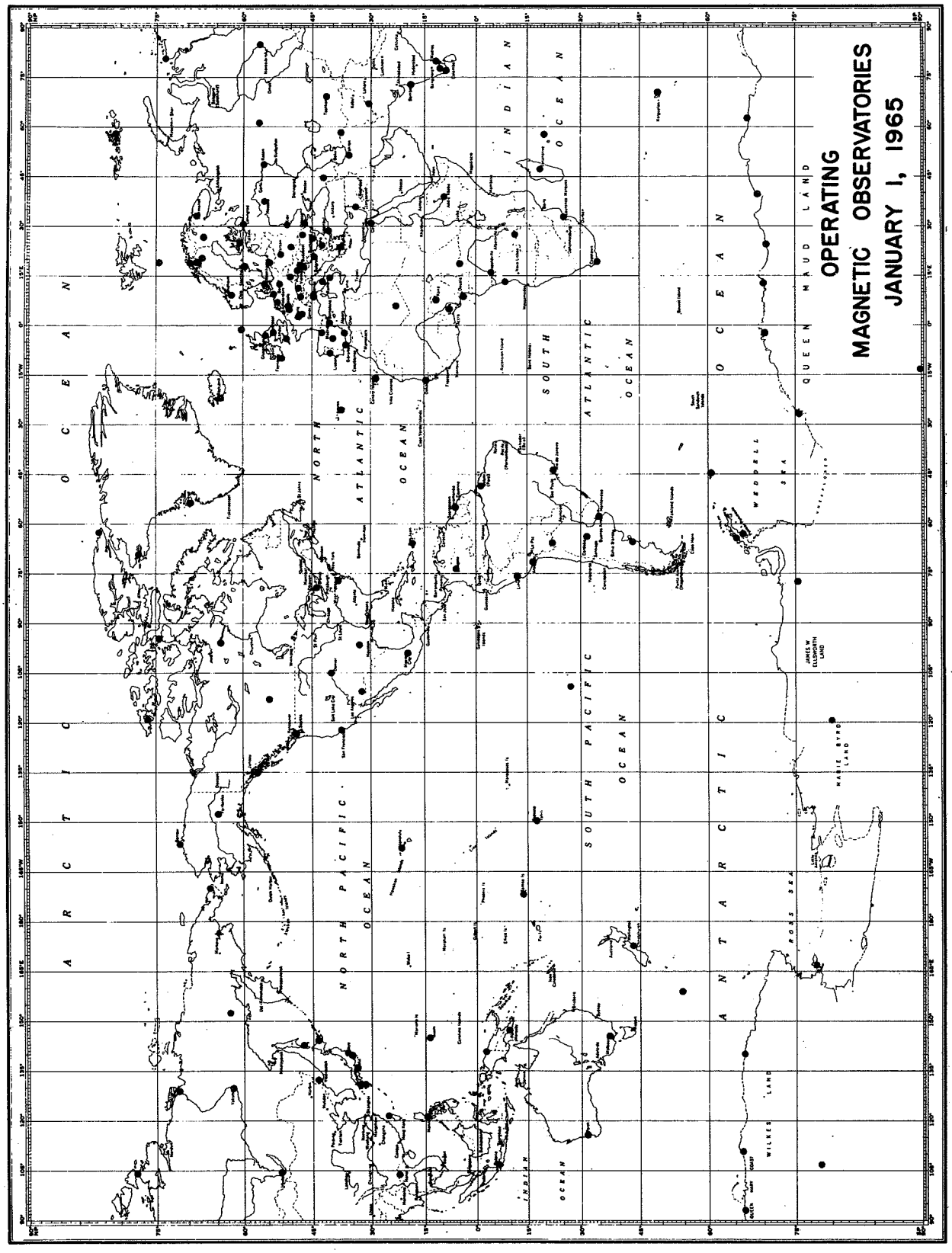
PART IV

GEOMAGNETIC DATA

DATA DESCRIPTION

Geomagnetic observatories measure and record variations in the D, H, and Z (declination, horizontal, and vertical) components of the earth's magnetic field. These data are available in the forms of local and planetary activity indices, data tabulations, digital data tapes, and magnetograms.

A map and a list of ground geomagnetic observatories giving both geographic and geomagnetic coordinates precede the data listings. The map has been made available through the cooperation of the Environmental Science Services Administration, U. S. Coast and Geodetic Survey, Seismology and Geomagnetism Division.



This map has been made available through the cooperation of ESSA, U.S. Coast and Geodetic Survey, Geomagnetism Division.

STATION LIST

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
ATLANTIC OCEAN, NORTH					
MOCA	SPAIN	3.4N	8.7E	5.7N	78.6E
PONTA DELGADA	PORTUGAL	37.8N	25.7W	45.6N	50.9E
TENERIFE	SPAIN	28.3N	16.3W	35.0N	58.6E
ARCTIC OCEAN					
HEISS ISLAND	USSR	80.6N	58.1E	71.3N	155.3E
NORTH POLE 13	USSR				
INDIAN OCEAN					
KERGUELEN ISLAND	FRANCE/USA	49.4S	70.2E	57.2S	128.0E
PACIFIC OCEAN, NORTH					
FANNING ISLAND	USA	3.9N	159.4W	3.9N	268.9E
GUAM	USA	13.6N	144.8E	3.9N	212.8E
KOROR ISLAND	USA	7.3N	123.5E	3.3S	203.5E
MAJURO	USA	7.1N	138.8W	1.3N	239.6E
PACIFIC OCEAN, SOUTH					
APIA	NEW ZEALAND	13.8S	171.8W	16.0S	260.2E
EASTER ISLAND	CHILE	27.2S	109.4W	18.3S	322.6E
JARVIS ISLAND	USA	0.4S	160.1W	0.5S	269.0E
MACQUARIE ISLAND	AUSTRALIA	54.5S	158.9E	61.1S	243.1E
ANGOLA					
LUANDA	PORTUGAL	8.8S	13.2E	7.1S	80.5E
ANTARCTICA					
AMUNDSEN-SCOTT	USA	90.0S	0.0E	78.5S	0.0E
ARGENTINE ISLANDS	UNITED KINGDOM/USA	65.3S	64.3W	53.8S	3.3E
BYRD STATION	USA	79.9S	120.0W	70.6S	336.0E
CAPE HALLETT	NEW ZEALAND/USA	72.3S	170.2E	74.7S	278.2E
DUMONT D'URVILLE	FRANCE	66.7S	140.0E	74.6S	227.8E
EIGHTS STATION	USA	75.2S	77.2W	64.0S	358.0E
G. GONZALEZ VIDELA	CHILE	64.8S	62.8W	53.4S	4.4E
HALLEY BAY	UNITED KINGDOM	75.5S	26.7W	65.6S	24.2E
LITTLE AMERICA	USA	78.2S	162.2W	74.0S	311.9E
MAWSON	AUSTRALIA	67.6S	62.9E	73.1S	103.0E
MIRNY	USSR	66.6S	93.0E	77.0S	146.8E
NOVOLAZAREVSKAYA	USSR	70.8S	11.8E	66.2S	53.6E
ROI BAUDOUIN	BELGIUM	70.3S	24.2E	68.0S	63.2E
VOSTOK	USSR	78.5S	106.8E	90.2S	91.4E
WILKES	AUSTRALIA/USA	66.3S	110.5E	77.8S	179.0E
ARGENTINA					
LA QUIACA	ARGENTINA	22.1S	65.6W	10.6S	3.2E
PILAR	ARGENTINA	31.7S	63.9W	20.2S	4.6E
TRELEW	ARGENTINA	43.2S	65.3W	32.0S	3.2E
AUSTRALIA					
BRISBANE	AUSTRALIA	27.3S	153.0E	35.8S	226.9E
GNANGARA	AUSTRALIA	31.5S	115.6E	43.4S	185.8E
TOOLANGI	AUSTRALIA	37.3S	145.3E	46.7S	220.9E
BELGIUM					
DOURBES	BELGIUM	50.1N	4.6E	52.0N	87.7E
BRAZIL					
SAO JOSE DOS CAMPOS	BRAZIL/USA	23.2S	45.9W	12.4S	21.6E
TATUOCA	BRAZIL	1.2S	48.5W	8.4N	20.9E
VASSOURAS	BRAZIL	22.4S	43.7W	11.9S	23.9E
CANADA					
AGINCOURT	CANADA	43.8N	79.3W	55.2N	346.9E
ALERT	CANADA	82.5N	62.5W	86.7N	168.7E
BAKER LAKE	CANADA	64.3N	96.0W	73.9N	314.8E
CHURCHILL	CANADA	58.8N	94.1W	68.8N	322.5E
GREAT WHALE	CANADA/USA	55.3N	77.8W	66.8N	347.2E
MEANOOK	CANADA	54.6N	113.3W	61.9N	300.7E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
CANADA					
MOULD BAY	CANADA	76.2N	119.4W	79.1N	284.7E
RESOLUTE BAY	CANADA	74.7N	94.9W	83.1N	287.7E
VICTORIA	CANADA	48.5N	123.4W	54.3N	292.7E
CENTRAL AFRICAN REPUBLIC					
BANGUI	FRANCE	4.6N	18.6E	5.0N	88.6E
COLOMBIA					
FUQUENE	COLOMBIA	5.5N	73.2W	16.9N	355.1E
CONGO					
LEOPOLDVILLE/BINSA	CONGO	4.4S	15.3E	3.1S	83.5E
CZECHOSLOVAKIA					
HURBANOVO	CZECHOSLOVAKIA	47.9N	18.2E	47.2N	99.8E
PRUHONICE	CZECHOSLOVAKIA	49.9N	14.6E	49.8N	97.3E
DENMARK					
RUDE SKOV	DENMARK	55.9N	12.5E	55.9N	98.6E
ENGLAND					
HARTLAND	UNITED KINGDOM	51.0N	4.5W	54.6N	79.0E
STONYHURST	UNITED KINGDOM	53.9N	2.5W	56.9N	82.7E
ETHIOPIA					
ADDIS ABABA	ETHIOPIA	9.0N	38.8E	5.3N	109.2E
FINLAND					
NURMIJARVI	FINLAND	60.5N	24.7E	57.9N	112.6E
SODANKYLA	FINLAND	67.4N	26.7E	63.7N	120.0E
FRANCE					
CHAMBON-LA-FORET	FRANCE	48.0N	2.3E	50.5N	84.0E
GERMAN DEMOCRATIC REPUBLIC					
NIEMEGK	GERMAN DEMOCRATIC REPUBLIC	52.1N	12.7E	52.2N	96.6E
GERMAN FEDERAL REPUBLIC					
FURSTENFELDBRUCK	GERMAN FEDERAL REPUBLIC	48.2N	11.3E	48.8N	93.3E
WINGST	GERMAN FEDERAL REPUBLIC	53.8N	9.1E	54.5N	94.0E
GREENLAND					
GODHAVN	DENMARK/USA	69.3N	53.3W	79.8N	32.5E
JULIANEHAAB	DENMARK	60.7N	46.0W	70.8N	35.4E
SUKKERTOPPEN	DENMARK	65.4N	52.9W	76.1N	28.7E
THULE	DENMARK/USA	76.5N	68.8W	88.1N	1.1E
ICELAND					
LEIRVOGUR	ICELAND	64.2N	21.7W	70.2N	71.0E
INDIA					
ALIBAG	INDIA	18.6N	72.9E	9.5N	143.7E
ANNAMALAINAGAR	INDIA	11.4N	79.7E	1.8N	149.4E
KODAIKANAL	INDIA	10.2N	77.5E	0.6N	147.1E
TRIVANDRUM	INDIA	8.5N	76.9E	1.1S	146.3E
INDONESIA					
TANGERANG	INDONESIA	6.1S	106.6E	17.6S	175.4E
IRELAND					
VALENTIA	IRELAND	51.9N	10.3W	56.1N	73.1E
ITALY					
GENOVA (CASTELLACCIO)	ITALY	44.4N	8.9E	45.7N	89.5E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
ITALY					
LA MADDALENA	ITALY	41.2N	9.4E	42.7N	88.5E
L'AQUILA	ITALY	42.4N	13.3E	42.9N	92.9E
JAPAN					
KAKIOKA	JAPAN	36.2N	140.2E	26.0N	206.0E
KANOYA	JAPAN	31.4N	130.9E	20.5N	198.1E
MEMAMBETSU	JAPAN	43.9N	144.2E	34.0N	208.4E
KENYA					
NAIROBI	KENYA	1.3S	36.8E	4.4S	105.2E
MALAGASY REPUBLIC					
TANANARIVE	FRANCE	18.9S	47.5E	23.7S	112.6E
NETHERLANDS					
WITTEVEEN	NETHERLANDS	52.8N	6.7E	54.2N	91.0E
NEW GUINEA					
HOLLANDIA	NEW GUINEA	2.5S	140.5E	12.5S	210.3E
PORT MORESBY	AUSTRALIA	9.2S	147.1E	18.6S	217.9E
NEW ZEALAND					
AMBERLEY	NEW ZEALAND	43.2S	172.7E	47.7S	252.5E
NIGERIA					
IBADAN	NIGERIA	7.3N	3.9E	10.6N	74.6E
ZARIA	NIGERIA	11.2N	7.7E	13.7N	79.1E
NORWAY					
TROMSO	NORWAY	69.7N	18.9E	67.2N	116.8E
PERU					
HUANCAYO	PERU/USA	12.1S	75.3W	0.6S	353.8E
PHILIPPINES					
BAGUIO	PHILIPPINES/USA	16.4N	120.6E	5.1N	189.3E
DAVAO	PHILIPPINES	7.1N	125.6E	4.1S	194.5E
MUNTINLUPA	PHILIPPINES	14.4N	121.0E	3.1N	189.7E
POLAND					
BELSK	POLAND	51.8N	20.8E	50.4N	104.0E
HEL	POLAND	54.6N	18.8E	53.5N	103.7E
SWIDER	POLAND	52.1N	21.3E	50.6N	104.6E
PORTUGAL					
COIMBRA	PORTUGAL	40.2N	8.4W	45.0N	70.2E
PUERTO RICO					
SAN JUAN	USA	18.4N	66.0W	29.9N	3.2E
REPUBLIC OF SOUTH AFRICA					
HERMANUS	REPUBLIC OF SOUTH AFRICA	34.4S	19.2E	33.3S	80.5E
RUMANIA					
SURLARI	RUMANIA	44.7N	26.3E	42.5N	106.1E
SCOTLAND					
LERWICK	UNITED KINGDOM	60.1N	1.1W	62.5N	88.6E
SENEGAL					
M'BOUR	FRANCE	14.5N	17.0W	21.2N	55.1E
SPAIN					
ALMERIA	SPAIN	36.9N	2.5W	40.6N	75.3E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
SPAIN					
EBRO (TORTOSA)	SPAIN	40.8N	0.5E	43.9N	79.7E
LOGRONO	SPAIN	42.5N	2.5W	46.1N	77.0E
SAN FERNANDO	SPAIN/USA	36.5N	6.2W	41.0N	71.3E
TOLEDO	SPAIN	39.9N	4.1W	43.6N	75.7E
SURINAM					
PARAMARIBO	NETHERLANDS	5.8N	55.2W	17.0N	14.5E
SWEDEN					
KIRUNA	SWEDEN/USA	67.8N	20.4E	65.3N	115.9E
LOVO	SWEDEN	59.3N	17.8E	58.2N	105.8E
TURKEY					
ISTANBUL (KANDILLI)	TURKEY	41.1N	29.1E	38.5N	107.5E
UNITED ARAB REPUBLIC					
MISALLAT	UNITED ARAB REPUBLIC	29.5N	30.9E	26.9N	105.9E
UNITED STATES OF AMERICA					
ANCHORAGE, ALASKA	USA	61.2N	149.9W	60.9N	258.1E
BARROW, ALASKA	USA	71.3N	156.8W	68.6N	241.0E
BELOIT, KANSAS	USA	39.5N	98.1W	49.2N	324.9E
BIG DELTA, ALASKA	USA	64.0N	145.7W	64.3N	259.3E
BOULDER, COLORADO	USA	40.0N	105.3W	48.9N	316.4E
COLLEGE, ALASKA	USA	64.9N	147.8W	64.7N	256.5E
DALLAS, TEXAS	USA	32.8N	96.8W	43.0N	327.7E
FREDERICKSBURG, VIRGINIA	USA	38.2N	77.4W	49.6N	349.9E
HEALY, ALASKA	USA	63.9N	149.1W	63.6N	256.5E
HONOLULU, HAWAII	USA	21.3N	158.1W	21.0N	266.4E
NEWPORT, WASHINGTON	USA	48.3N	117.1W	55.1N	300.0E
SITKA, ALASKA	USA	57.1N	135.3W	60.0N	275.4E
TUCSON, ARIZONA	USA	32.2N	110.9W	40.4N	312.1E
WESTON, MASSACHUSETTS	USA	42.3N	71.3W	53.9N	357.1E
USSR					
ALMA-ATA	USSR	43.3N	76.9E	33.5N	150.8E
ASHKHABAD	USSR	37.9N	58.4E	30.6N	133.5E
CAPE CHELYUSKIN	USSR	77.7N	104.3E	66.3N	176.5E
CAPE WELLEN	USSR	66.2N	169.8W	61.8N	237.1E
DIXON ISLAND	USSR	73.6N	80.6E	63.0N	161.6E
DUSHETI	USSR	42.1N	44.7E	36.7N	122.1E
IRKUTSK	USSR	52.3N	104.3E	40.8N	174.6E
KIEV	USSR	50.7N	30.3E	47.3N	112.2E
KRASNAYA PAKHRA (MOSCOW)	USSR	55.5N	37.3E	50.8N	120.5E
LVOV	USSR	49.9N	23.8E	48.0N	105.8E
MINSK	USSR	53.9N	27.5E	51.4N	110.5E
MURMANSK	USSR	69.0N	33.0E	64.1N	126.5E
ODESSA	USSR	46.8N	30.9E	43.8N	111.1E
PETROPAVLOVSK	USSR	53.1N	158.6E	44.4N	218.2E
SREDNIKAN	USSR	62.4N	152.3E	53.2N	210.6E
SVERDLOVSK	USSR	56.7N	61.1E	48.5N	140.7E
TASHKENT	USSR	41.4N	69.2E	32.4N	143.7E
TIKSI BAY	USSR	71.6N	129.0E	60.4N	191.4E
TOMSK	USSR	56.5N	84.9E	46.1N	159.8E
VLADIVOSTOK	USSR	43.7N	132.2E	33.0N	198.0E
VOYEIKOVO (LENINGRAD)	USSR	59.9N	30.7E	56.2N	117.4E
YAKUTSK	USSR	62.0N	129.7E	51.0N	193.8E
YUZHNO SAKHALINSK	USSR	46.9N	142.7E	36.9N	206.7E
ZAIMISCHE (KAZAN)	USSR	55.8N	48.9E	49.3N	130.4E

LOCAL ACTIVITY INDICES

Data include the K, C, and Q indices.

K-Index: Bartel's K index measures the intensity of magnetic activity attributable to solar particle-radiation at a station. The effect of solar-wave radiation (the quiet daily variations consisting of solar (Sq) and lunar (L) daily variations,

Sq current augmented by solar flare effects and the recovery phase of the ring current field) has been removed. The peak amplitude (a), in γ, of the remaining field in each 3-hr period determines the K value according to a scale chosen for each observatory. One of these scales, valid for stations at about 50° geomagnetic latitude, assigns K for values of a as follows:

K =	0	1	2	3	4	5	6	7	8	9
a (lower limit in gamma) =	0	5	10	20	40	70	120	200	330	500

Scales for stations at other geomagnetic latitudes are proportional. The lower limit for K = 9 ranges from 300γ at very low geomagnetic latitudes (outside the belt of the equatorial electrojet) to 2000γ in the auroral latitudes.

C Index: C represents the magnetic character figure and is an index of 24-hr intervals. Participating observatories evaluate each day's records on the following basis:

0 = Quiet
1 = Moderately disturbed
2 = Very disturbed

Data listings for the K and C indices follow the description of the Q index.

Q Index: The Q index tested during IGY is particularly applicable to ionospheric studies at high magnetic latitudes. It is analogous to K but is based upon the extreme positive and negative deviation of the magnetic field for the quiet-day average curve during 15-min intervals. The Q index, providing a measure of magnetic activity centered on each quarter hour, may be compared with quarter-hour ionograms. Unlike the K scale, the Q scale is independent of position. The scale of Q is as follows:

Q	0	1	2	3	4	5	6	7	8	9	10	11
Upper limit gamma	10	20	40	80	140	240	400	660	1000	1500	2500	∞

Data from Kiruna, Sweden, are available for the period July 1, 1957, through Dec. 31, 1961.

K AND C INDICES

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
AGINCOURT		1960	KKK	KKK	KKK	KKK
43.8N	79.3W	1961	KKK	KKK	KKK	KKK
		1962	KKK	KKK	KKK	KKK
		1963	KKK	KKK	KKK	KKK
ALMA-ATA		1964	B-B	BBB	BBB	B--
43.3N	76.9E					
AMUNDSEN-SCOTT		1959	BBB	BBB	BBB	BBB
90.0S	0.0E	1960	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBK
		1964	--K	KKK	KKK	KK-
ASHKHABAD		1962	BBB	BBB	BBB	BBB
37.9N	58.4E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
BARROW		1962	BBB	BBB	BBB	BBB
71.3N	156.8W	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
BELSK		1962	BBB		BBB	BBB
51.8N	20.8E	1963	BBB	BBB	BBB	
		1964	BBB	BBB	BBB	BBB
BOULDER		1963		KKK	KK-	
40.0N	105.3W	1964	KKK	KKK	KKK	KKK
BRISBANE		1962	KKK	KKK	KKK	KKK
27.3S	153.0E	1963	KKK	KKK	KKK	KKK
		1964	KKK	KKK	K--	
BYRD STATION		1959	BBB	BBB	BBB	BBB
79.9S	120.0W	1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BKK
		1963	KKK	KKK	KKK	KKK
		1964	KKK	KKK	KKK	KKK
CAPE CHELYUSKIN		1962	BBB	BBB	BBB	BBB
77.7N	104.3E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
CAPE HALLETT		1962	BBB	BBB	BBB	BBB
72.3S	170.2E	1964	B--			
CAPE WELLEN		1962	BBB	BBB	BBB	BBB
66.2N	169.8W	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
COIMBRA		1964	BBB	BBB	BBB	BBB
40.2N	8.4W					
COLLEGE		1958	BBB	BBB	BBB	BBB
64.9N	147.8W	1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBB			
DIXON ISLAND		1962	-BB	BBB	BBB	BBB
73.6N	80.6E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
DOURBES		1962	BBB	BBB	BBB	BBB
50.1N	4.6E	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
DUMONT D'URVILLE		1963	KKK	KKK	KKK	KKK
66.7S	140.0E	1964	KKK	KKK	KKK	KKK
DUSHETI		1962	BBB	BBB	BBB	BBB
42.1N	44.7E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
EIGHTS STATION		1963		--K	KKK	KKK
75.2S	77.2W	1964	KKK	KKK	KKK	KKK
FREDERICKSBURG		1958	BBB	BBB	BBB	BBB
38.2N	77.4W	1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	KKK	KKK	K--	
		1967		-KK	KK-	

K = K Indices C = C Indices B = Both Indices

K AND C INDICES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
FUQUENE 5.5N	73.2W	1963	BBB	BBB	BBB	BBB
FURSTENFELDBRUCK 48.2N	11.3E	1963	BBB	BBB	BBB	BBB
GNANGARA 31.5S	115.6E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
GUAM 13.6N	144.8E	1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1967		-K-		
HARTLAND 51.0N	4.5W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	KKK
HEISS ISLAND 80.6N	58.1E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
HEL 54.6N	18.8E	1962	BBB		BBB	BBB
		1963	BBB	BBB	BBB	
		1964	BBB	BBB	BBB	BBB
HERMANUS 34.4S	19.2E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BB-
		1964	-BB	BBB	BBB	BBB
HONOLULU 21.3N	158.1W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1967		-K-		
HUANCAYO 12.1S	75.3W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
HURBANOVO 47.9N	18.2E	1964	BBB	BBB	BBB	BBB
IRKUTSK 52.3N	104.3E	1962	BBB	BBB	-BB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
ISTANBUL 41.1N	29.1E	1963			BBB	BBB
		1964	BBB	BBB	BBB	BBB
KAKIOKA 36.2N	140.2E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
KANOYA 31.4N	130.9E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
KERGUELEN ISLAND 49.4S	70.2E	1963	KKK	KKK	KKK	KKK
		1964	KKK	KKK	KKK	KKK
KIEV 50.7N	30.3E	1962	BBB	BBB	-BB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
KIRUNA 67.8N	20.4E	1959	KKK	KKK	KKK	KKK
		1961	KKK	KKK	KKK	KKK
		1962	KKK	KKK	KKK	KKK
		1963	KKK	KKK	KKK	KKK
		1964	KKK	KKK	KKK	KKK
		1965	KKK	KKK	KKK	KKK
		1966	KK-			
KRASNAYA PAKHRA 55.5N	37.3E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
LA MADDALENA 41.2N	9.4E	1962	BBB	BBB		-BB
		1963	BBB	BBB	BBB	
L'AQUILA 42.4N	13.3E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB

K = K Indices C = C Indices B = Both Indices

K AND C INDICES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
LEOPOLDVILLE		1962	CCC	CCC	CCC	CCC
4.4S	15.3E	1963	CCC	CCC	CCC	CCC
		1964	CCC	CCC	CBB	BBB
LUANDA		1962	BBB	BBB	BBB	BBB
8.8S	13.2E	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBK
LVOV		1962	BBB	BBB	BBB	BBB
49.9N	23.8E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
MACQUARIE	ISLAND	1962	BBB	BBB	BBB	BBB
54.5S	158.9E	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
MAWSON		1962	BBB	BBB	BBB	BBB
67.6S	62.9E	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
M'BOUR		1963		-KK	KKK	KKK
14.5N	17.0W	1964	KKK	KKK	KKK	KKK
MEANOOK		1959	KKK	KKK	KKK	KKK
54.6N	113.3W	1960	KKK	KKK	KKK	KKK
		1961	KKK	KKK	KKK	KKK
		1962	KKK	KKK	KKK	KKK
		1963	KKK	KKK	KKK	KKK
MEMAMBETSU		1960	BBB	BBB	BBB	BBB
43.9N	144.2E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
MINSK		1962	BBB	BBB	BBB	BBB
53.9N	27.5E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
MIRNY		1962	BBB	BBB	BBB	BBB
66.6S	93.0E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
MURMANSK		1962	BBB	BBB	BBB	BBB
69.0N	33.0E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
NIEMEGK		1965				-BB
52.1N	12.7E					
NOVOLAZAREVSKAYA		1962	BBB	BBB	BBB	BBB
70.8S	11.8E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
ODESSA		1962	BBB	BBB	BBB	BBB
46.8N	30.9E	1963	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--
PONTA DELGADA		1962	BBB	BBB	BBB	BBB
37.8N	25.7W	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
PORT MORESBY		1962	KKK	KKK	KKK	KKK
9.2S	147.1E	1963	KKK	KKK	KKK	KKK
		1964	KKK	KKK	KKK	KKK
PRUHONICE		1962	BBB	BBB	BBB	BBB
49.9N	14.6E	1963	BBB			
RUDE SKOV		1962	BBB	BBB	BBB	BBB
55.9N	12.5E					
SAN FERNANDO		1962	BBB	BBB	BBB	BBB
36.5N	6.2W	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
SAN JUAN		1958	BBB	BBB	BBB	BBB
18.4N	66.0W	1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1967		-K-		

K = K Indices C = C Indices B = Both Indices

K AND C INDICES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SITKA		1958	BBB	BBB	BBB	BBB	TUCSON						
57.1N	135.3W	1959	BBB	BBB	BBB	BBB	32.2N	110.9W	1958	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB			1959	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB			1960	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB			1961	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB			1962	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB			1963	BBB	BBB	BBB	BBB
		1967		-K-					1964	BBB	BBB	BBB	BBB
									1967		-K-		
SODANKYLA		1962	BBB	BBB	BBB	BBB	VASSOURAS						
67.4N	26.7E	1963	BBB	BBB	BBB	BBB	22.4S	43.7W	1962	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB			1963	BBB	BBB	BBB	BBB
									1964	BBB	BBB	BBB	BBB
SREDNIKAN		1962	BBB	BBB	BBB	BBB	VLADIVOSTOK						
62.4N	152.3E	1963	BBB	BBB	BBB	BBB	43.7N	132.2E	1962	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--			1963	BBB	BB-	BBB	BBB
									1964	B-B	BBB	BBB	B--
SURLARI		1962	BBB	BBB	BBB	BBB	VOSTOK						
44.7N	26.3E	1963	BBB	BB-	BBB	BBB	78.5S	106.9E	1962	B--			
		1964	BBB	BBB	BBB	BB-			1963			-BB	BBB
									1964	B-B	BBB	BBB	B--
SVERDLOVSK		1962	BBB	BBB	BBB	BBB	VOYEIKOVO						
56.7N	61.1E	1963	BBB	BBB	BBB	BBB	59.9N	30.7E	1962	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--			1963	BBB	BBB	BBB	BBB
									1964	B-B	BB-	BBB	B--
SWIDER		1962	BBB		BBB	BBB	WILKES						
52.1N	21.3E	1963	BBB	BBB	BBB		66.3S	110.5E	1962	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB			1963	BBB	BBB	BBB	BBB
									1964	BBB	BBB	BBB	BBB
TASHKENT		1962	BBB	BBB	BBB	BBB	WINGST						
41.4N	69.2E	1963	BBB	BBB	BBB	BBB	53.8N	9.1E	1962	BBB	BBB	BBB	BBB
		1964	B-B	BBB	BBB	B--			1963	BBB		--B	BBB
									1964	BBB	BBK	-BB	BBB
THULE		1962	KKK	KKK	KKK	KKK	WITTEVEEN		1958	BBB	BBB	BBB	BBB
76.5N	68.8W	1963	KKK	KKK	KKK	KKK	52.8N	6.7E	1959	BBB	BBB	BBB	BBB
									1960	BBB	BBB	BBB	BBB
									1961	BBB	BBB	BBB	BBB
TIKSI BAY		1962	BBB	BBB	BBB	BBB			1962	BBB	BBB	BBB	BBB
71.6N	129.0E	1963	BBB	BBB	BBB	BBB			1963	BBB	BBB	BBB	BBB
		1964	B--	BBB	BBB	B--			1964	BBB	BBB	BBB	BBB
									1965	KKK	KKK	KKK	KKK
									1966	KK-			
TOMSK		1962	BBB	BBB	BBB	BBB							
56.5N	84.9E	1963	BBB	BBB	BBB	BBB							
		1964	B-B	BBB	BBB	B--	YAKUTSK		1962	BBB	BBB	BBB	BBB
							62.0N	129.7E	1963	BBB	BBB	BBB	BBB
TOOLANGI		1962	BBB	BBB	BBB	BBB			1964	B-B	BBB	BBB	B--
37.3S	145.3E	1963	BBB	BBB	BBB	BBB							
		1964	BBB	BBB	BBB	BBB							
							YUZHNO		1962	BBB	BBB	BBB	BBB
							46.9N	142.7E	1963	BBB	BBB	BBB	BBB
TRELEW		1962	BBB	BBB	BBB	BBB			1964	B-B	BBB	BBB	B--
43.2S	65.3W	1963	BBB	BBB	BBB	BBB							
		1964	BBB	BBB	BBB	BBB							
							ZAIMISCHE		1962	BBB	BBB	BBB	BBB
							55.8N	48.9E	1963	BBB	BBB	BBB	BBB
TROMSO		1962	KKK	KKK	KKK	KKK			1964	B-B	BBB	BBB	B--
69.7N	18.9E	1963	KKK	KKK	KKK	KKK							

K = K Indices C = C Indices B = Both Indices

PLANETARY ACTIVITY INDICES

Planetary indices are derived from local K and C indices and are presented in tabular and graphical format and on magnetic tape. Data include the K_p and A_p indices and the C_i and C_p figures, defined as follows:

K_p Index – the mean standardized K-index from 12 observatories lying in northern or southern latitudes between 48° and 63° geomagnetic latitude. The scale is 0 to 9, expressed in thirds of a unit, e.g., 5- is 4-2/3, 5+ is 5-1/3. This planetary index is designed to measure solar particle radiation by its magnetic effects, specifically to meet the needs of the research workers in the ionospheric and magnetospheric fields.

A_p Index – a daily index of magnetic activity on a linear scale rather than on the quasi-logarithmic scale of the K indices. It is the average of the eight values of an intermediate 3-hourly index "ap" defined as one-half the average gamma range of the most disturbed component (D, H, or Z) in the 3-hour interval at standard stations. In practice, ap is computed from K_p for each 3-hour interval. The extreme range of the A_p scale is from 0 to 400.

C_i Figure – the arithmetic mean of the local C indices for each day.

C_p Figure – a standardized version of C_i derived from K_p by converting the daily sum of ap into the range 0.0 to 2.5.

Tables of A_p, K_p, and C_p have been published for 1932 to 1961 in IAGA Bulletin No. 18, 1962, by J. Bartels, and distributed by North-Holland Publishing Company, Amsterdam. Planetary activity indices also appear regularly in the Journal of Geophysical Research and in the ESSA/ITSA, IER-FB (formerly CRPL F-Part B) series bulletins, Solar-Geophysical Data.

The tables published in Solar-Geophysical Data include values of K_p, A_p, C_i, and C_p; selected quiet and disturbed days are indicated in the tables by the designations QQ, Q, and D. These data are made available by the permanent service of IUGG, Association of Geomagnetism and Aeronomy, through Commission IV – Magnetic Activity and Disturbances. The Meteorological Office, Debilt, Holland collects the data from magnetic observatories throughout the world and compiles the C_i and selected days data. Göttingen University computes the planetary and equivalent amplitude indices.

Monthly, a graph of K_p for eight solar rotations is furnished through the courtesy of the Geophysikalisches Institut of the University of Göttingen and published in Solar-Geophysical Data. Below the chart, a table of A_p indices for

the last 12 months is presented so that trends in geomagnetic activity can be easily followed. The Institute also furnishes a graph of K_p for the entire year.

Values of K_p on one magnetic tape from Jan. 1932 to Dec. 1967 are available from NSSDC. The tape was written with an IBM 360 Model 50 at a density of 556 characters per inch on seven track tape. The tape is in BCD format with 80 characters per physical record. A subroutine (basic Fortran IV) to read the tape, and subroutines to convert K_p to a_p, A_p, C_p, and C_9, are available.

Tabular and graphical data are available at the NSSDC from Jan. 1932 to July 1967, and were obtained from the following sources:

1. IAGA Bulletin No. 18, 1962, covering the period 1932 to 1961.

2. Solar-Geophysical Data, CRPL F-Part B series bulletins covering the period from Jan. 1962 through Nov. 1966. Data for Dec. 1966 through Sept. 1967 are contained in the IER-FB series of Solar-Geophysical Data.

The K_p data on magnetic tape are made available through the European Space Data Centre (ESDAC) of the European Space Research Organization (ESRO), Darmstadt, Germany, and are received on a continuing basis.

HOURLY VALUES OF EQUATORIAL Dst

The symbol Dst represents the variation in the H component of the geomagnetic field at equatorial latitudes. The method of derivation of Dst is discussed by M. Sugiura in Annals of the International Geophysical Year, Vol. XXXV, 9-45, Aug. 1966, and by M. Sugiura and S. Hendricks in the NASA GSFC document X-612-66-355, Aug. 1966.

Hourly values of Dst have been determined for the IGY (July 1957 - Dec. 1958) and for the interval Jan. 1961 through June 1967. The hourly values (in units of gamma) are available in either tabular form or on a single magnetic tape containing BCD card images recorded at 556 bpi. The Dst values for the IGY and for 1961 were derived using data from eight stations: Hermanus, Alibag, Kakioka, Apia, Honolulu, San Juan, Pilar, and M'Bour. Beginning in 1962, computations were made using data from Hermanus, San Juan, and Honolulu.

DIGITIZED GEOMAGNETIC DATA

The listings on the following pages represent digitized geomagnetic data in BCD format on magnetic tape available through the U.S. Coast and Geodetic Survey as part of the ESSA-NASA cooperative data reduction program.

The three components of the geomagnetic field (DHZ: declination, horizontal, and vertical) are listed for each month. These data are further coded:

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

These data are available upon request to NSSDC.

DIGITIZED GEOMAGNETIC DATA

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
ADDIS ABABA	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
ALERT	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	000	000	000
ALIBAG	1961	010	010	010	010	010	010	010	010	010	010	010	010
	1964	333	330	330	030	030	030	030	030	333	333	333	333
AMBERLEY	1964	333	330	330	330	330	330	330	330	000	000	000	000
	1965	000	000	000	000	222	222	222	222	222	330	000	000
AMUNDSEN-SCOTT	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	011	111	111	111	111	111	111	111	111	111	111	111
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	000	000	000	000	000	000	000	000	000	000	000
APIA	1961	010	010	010	010	010	010	010	010	010	010	010	010
	1963	030	030	030	030	030	030	030	030	030	030	030	030
	1964	333	330	330	330	330	330	000	000	000	000	000	000
	1965	000	000	000	000	000	000	000	000	000	333	333	333
BAGUIO	1965	000	000	000	000	000	000	000	000	000	222	000	000
BAKER LAKE	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	000	000	000
BANGUI	1961	000	000	000	000	000	000	000	330	330	330	330	330
	1965	000	000	000	000	000	000	000	000	000	333	000	000
BARROW	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	222	000	000	000	000	000
BOULDER	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
BYRD STATION	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1962	000	000	111	111	111	111	111	111	111	111	111	111
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	000
CAPE CHELYUSKIN	1964	000	000	000	000	000	000	000	000	222	222	222	222

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
CHURCHILL	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
COLLEGE	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	111	111	111	111	111
	1962	111	111	111	111	111	111	111	111	111	333	333	333
	1963	333	333	333	333	333	333	333	333	111	111	111	111
	1964	333	333	333	333	333	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
DALLAS	1964	333	000	000	000	000	000	000	000	000	000	000	000
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	000	000	000	000	000	000	000	000	000
	1967	333	333	333	333	333	333	333	222	222	000	000	000
DIXON ISLAND	1964	000	000	000	000	000	000	000	000	222	222	222	222
DUMONT D'URVILLE	1964	000	000	000	000	000	000	000	000	222	222	222	222
	1965	222	222	222	222	222	222	222	222	222	222	222	222
EASTER ISLAND	1964	333	000	000	000	000	000	000	000	000	000	000	000
EBRO (TORTOSA)	1966	333	333	333	333	333	333	222	222	222	222	000	000
EIGHTS STATION	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	000	000	000
FREDERICKSBURG	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	001	001	011	011	011	011	333	333	333	333	333	333
	1962	111	111	111	111	111	111	111	111	111	111	111	111
	1963	111	111	111	111	111	111	111	111	111	111	333	333
	1964	333	333	333	333	333	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
FUQUENE	1961	000	000	000	000	000	000	000	330	330	330	330	330
	1964	333	330	330	330	330	330	330	333	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	222	222	222	222	222	222	000	000	000	000	000	000
FURSTENFELDBRUCK	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	333	333	222	222	222
	1967	222	222	222	222	222	222	000	000	000	000	000	000

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
GNANGARA	1961	000	000	000	000	000	000	000	030	030	030	030	030
	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	222	222	222	222
	1967	222	222	000	000	000	000	000	000	000	000	000	000
GODHAVN	1964	000	000	000	000	000	000	000	000	333	333	333	333
GREAT WHALE	1965	000	000	000	000	000	000	000	000	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	000	000	000
GUAM	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	131	131	131	131	131
	1962	111	111	111	111	111	111	111	111	111	333	333	333
	1963	333	333	333	333	333	333	333	333	000	000	000	000
	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
HARTLAND	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	222	222	222	222
	1967	222	000	000	000	000	000	000	000	000	000	000	000
HERMANUS	1961	010	010	010	010	010	010	010	010	010	010	010	010
	1962	010	010	010	010	010	010	010	010	010	010	010	010
	1963	030	030	030	030	030	030	030	030	030	030	030	030
	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	222	222	222	222	222	222	000	000	000	000	000	000
HONOLULU	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	131	131	131	131	131
	1962	111	111	111	111	111	111	111	111	111	111	111	111
	1963	131	131	131	131	131	131	131	131	131	131	333	333
	1964	333	333	333	333	333	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
HUANCAYO	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	222	222	222	222	222	222	222	222	222	222	222	222
IBADAN	1965	000	000	000	000	000	000	000	000	000	333	000	000

0 = No data available
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2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
IRKUTSK	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	222	333	333	333	333	222	222	222	000	000	222
KAKIOKA	1961	010	010	010	010	010	010	010	030	030	030	030	030
	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	222	222	222	222	222	222	000	000	000	000	000	000
KIRUNA	1962	000	000	000	000	000	000	000	000	000	333	333	333
	1963	333	333	333	333	333	333	333	333	000	000	000	000
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	000	000	000	000	000	000	000
KOROR ISLAND	1965	000	000	000	222	222	222	000	000	000	333	333	333
LEIRVOGUR	1962	000	000	000	000	000	000	000	000	000	333	333	333
	1963	333	333	333	333	333	333	333	333	000	000	000	000
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	222	222	222	222	222	222	000	000	000	000	000	000
LOVO	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	222	222	222	222	222	222	222	222	333	333	222	222
MACQUARIE ISLAND	1962	000	000	000	000	000	000	000	000	000	333	333	333
	1963	333	333	333	333	333	333	333	333	000	000	000	000
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	222	222	222	333	333	333	333	333	333	333	333	333
	1966	222	222	000	000	000	000	000	000	000	000	000	000
MAWSON	1964	000	000	000	000	000	000	000	000	222	222	222	222
	1965	222	222	222	000	000	000	000	000	222	222	222	222
	1966	222	000	000	000	000	000	000	000	000	000	000	000
M'BOUR	1961	010	010	010	010	010	010	010	010	010	010	010	010
	1965	000	000	000	000	000	000	000	000	000	333	333	333
	1966	333	333	333	333	333	333	222	333	333	222	222	222
MEANOOK	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	222	222

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
MEMAMBETSU	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	222	222	222	333	222	222
	1966	222	222	222	222	222	222	000	000	000	000	000	000
MIRNY	1964	000	000	000	000	000	000	000	000	222	222	222	222
MISALLAT	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	222	222	222	222	222	222
MOCA	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	222	222	222	222	222	222	222	000	000	000
MOULD BAY	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	000	000	000	000
MUNTINLUPA	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	222	222	222	222	222	222	222	222	222	222	222	222
MURMANSK	1964	000	000	000	000	000	000	000	000	222	222	222	222
NAIROBI	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	000	000	000	000	000	000	000	000	000
NEWPORT	1966	000	000	000	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
NURMIJARVI	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	222	222	222	222	222	222	000	000	000	000	000	000
ODESSA	1965	000	000	000	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	222	222	000	222
PARAMARIBO	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	222	222	222	222	222	222	000	000	000	000	000	000
PILAR	1961	010	010	010	010	010	010	010	010	010	010	010	010
	1964	000	000	000	000	000	000	000	000	000	333	333	333
	1965	000	000	000	000	000	333	333	333	333	333	333	333
	1966	333	333	333	000	000	000	000	000	000	000	000	000

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
PORT MORESBY	1961	000	000	000	000	000	000	000	030	030	030	030	030
	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	222	222	222	222
	1967	222	222	222	000	000	000	000	000	000	000	000	000
RESOLUTE BAY	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	000	000	000	000	000	000
RUDE SKOV	1964	333	000	000	000	000	000	000	000	000	000	000	000
SAN JUAN	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	131	131	131	131	131
	1962	011	011	011	011	011	011	011	011	011	333	333	333
	1963	333	333	333	333	333	333	333	333	131	131	333	333
	1964	333	333	333	333	333	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
SITKA	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	111	111	111	111	111
	1962	111	111	111	111	111	111	111	111	111	111	111	111
	1963	111	111	111	111	111	111	111	111	111	111	111	111
	1964	333	333	333	333	333	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
SUKKERTOPPEN	1965	000	000	000	000	000	000	000	000	000	333	000	000
SURLARI	1961	000	000	000	000	000	000	000	330	330	330	330	330
	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	000	000	000	000	000	000	000	000	000
SVERDLOVSK	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	222	222	222	222
TANANARIVE	1965	000	000	000	000	000	000	333	000	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
TANGERANG	1966	000	000	000	000	000	000	000	000	000	333	333	333
TASHKENT	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	222	222	222	222	000	222

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

DIGITIZED GEOMAGNETIC DATA (Continued)

OBSERVATORY	YEAR	JAN DHZ	FEB DHZ	MAR DHZ	APR DHZ	MAY DHZ	JUN DHZ	JUL DHZ	AUG DHZ	SEP DHZ	OCT DHZ	NOV DHZ	DEC DHZ
TATUOCA	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	222	222	222	222	222	222
TENERIFE	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	330	333	333	000	000	333	000	000
THULE	1964	000	000	000	000	000	000	000	000	222	222	222	222
	1965	222	222	222	000	222	222	222	222	222	000	000	000
TIKSI BAY	1964	000	000	000	000	000	000	000	000	222	222	222	222
TOLEDO	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
TOOLANGI	1961	000	000	000	000	000	000	000	030	030	030	030	030
	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	222	222	222	000	000	000	000	000	000	000	000	000
TRELEW	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	222	222	222	222	222	222	222	222	222
TUCSON	1960	111	111	111	111	111	111	111	111	111	111	111	111
	1961	111	111	111	111	111	111	111	331	331	331	331	331
	1962	111	111	111	111	111	111	111	111	111	111	111	111
	1963	111	111	111	111	111	111	111	111	111	111	111	111
	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	333	333	333	333	333	333
	1967	333	333	333	333	333	333	333	222	222	000	000	000
VICTORIA	1964	333	330	330	330	330	330	330	330	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	000	000	000	000	000	000	000	000	000
WILKES	1961	000	000	000	000	000	000	000	330	330	330	330	330
	1964	000	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	222	222	222	333	333	333
	1966	333	000	000	000	000	000	000	000	000	000	000	000
YAKUTSK	1964	333	000	000	000	000	000	000	000	333	333	333	333
	1965	333	333	333	333	333	333	333	333	333	333	333	333
	1966	333	333	333	333	333	333	000	000	000	000	000	000

0 = No data available
1 = Hourly values only
2 = 2.5-min values in process
3 = 2.5-min values available

MAGNETOGRAMS AND HOURLY VALUE TABLES

Absolute measurements of D, H, and Z are made regularly with magnetometers to determine base-line values. Both the instantaneous and the base-line values are plotted as magnetograms. The variations that require explanation, such as artificial disturbances, thunderstorms, or earthquakes, are noted on the magnetogram.

Hourly-value tables give mean values of D, H, and Z for each successive hour. The tables also give derived daily and monthly mean values.

The stations contributing magnetograms and/or hourly values are indicated in the following listing.

MAGNETOGRAMS AND HOURLY VALUE TABLES

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ADDIS ABABA		1964	GGG	GGG	GGG	GGG
9.0N	38.8E	1965	GGG	GGG	GGG	GGG
AGINCOURT		1961	HHH	HHH	HHH	HHH
43.8N	79.3W	1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	-BB	BBB	B-G	GGG
		1965	GG-	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
ALERT		1961	HHH	HHH	HHH	HHH
82.5N	62.5W	1962	BBB	BBB	BBB	BBB
		1963	GGG	GGG	GGG	GGG
		1965			GGG	GGG
		1966	GGG	GGG	GGG	GGG
ALIBAG		1963	GGG	GGG	GGG	GGG
18.6N	72.9E	1964	GGG	GGG		
		1965	GGG	GGG	GGG	GGG
ALMERIA		1964			--G	GGG
36.9N	2.5W	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
AMBERLEY		1964	GGG	GGG	GGG	GGG
43.2S	172.7E	1965	GGG	GGG	GGG	GGG
AMUNDSEN-SCOTT		1959	BBB	BBB	BBB	BBB
90.0S	0.0E	1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962				BBB
		1963	BBB	BBB	B--	
		1964	--G	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
		1966	G--			
ANCHORAGE		1957			BBB	BBB
61.2N	149.9W	1958	BBB	BBB	BBB	BBB
ANNAMALAINAGAR		1963	GGG	GGG	GGG	GGG
11.4N	79.7E	1965	GGG	GGG	GGG	GGG

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
APIA		1963	GGG	GGG	GGG	GGG
13.8S	171.8W	1964	BBB	BBB	BBB	BBB
		1965	GGG	GGG	GGG	GGG
ARGENTINE IS.		1961	BBB	BBB	BBB	BBB
65.3S	64.3W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
ASHKHABAD		1961	BBB	BBB	BBB	BBB
37.9N	58.4E	1962	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
BAGUIO		1961	GGG	GGG	GGG	GGG
16.4N	120.6E	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
BAKER LAKE		1959	HHH	HHH	HHH	HHH
64.3N	96.0W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	-BB	BBB	B-G	GGG
		1965	GGG	GGG	G-G	GGG
		1966	GGG	GGG	GGG	GGG
BANGUI		1961	BBB	BBB	BBB	BBB
4.6N	18.6E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
BARROW		1961	BBB	BBB	BBB	BBB
71.3N	156.8W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
BELOIT		1957			BBB	BBB
39.5N	98.1W	1958	BBB	BBB	BBB	BBB
BIG DELTA		1957			BBB	BBB
64.0N	145.7W	1958	BBB	BBB	BBB	BBB

G = Magnetograms H = Hourly values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
BOULDER		1961	GGG	GGG	GGG	GGG
40.0N	105.3W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
BYRD STATION		1957			BBB	BBB
79.9S	120.0W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	B--	
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	
CAPE CHELYUSKIN		1961	BBB	BBB	BBB	BBB
77.7N	104.3E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			BBB	BBB
		1965	BBB	BBB	BBB	BBB
CAPE HALLETT		1960	GGG	GGG	GGG	GGG
72.3S	170.2E	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
CAPE WELLEN		1961	BBB	BBB	BBB	BBB
66.2N	169.8W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	GGG	GGG	GGG	GGG
		1965	BBB	BBB	BBB	BBB
CHAMBON-LA-FORET		1961	GGG	GGG	GGG	GGG
48.0N	2.3E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
CHURCHILL		1964	-GG	GGG	G-G	GGG
58.8N	94.1W	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
COLLEGE		1957	BBB	BBB	BBB	BBB
64.9N	147.8W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
DALLAS		1964			--B	BBB
32.8N	96.8W	1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
DAVAO		1964		GGG	GGG	GGG
7.1N	125.6E	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
DIXON ISLAND		1961	BBB	BBB	BBB	BBB
73.6N	80.6E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--G	GGG
		1965	BBB	BBB	BBB	BBB
DOURBES		1961	GGG	GGG	GGG	GGG
50.1N	4.6E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
DUMONT D'URVILLE		1962	-GG	GGG	GGG	GGG
66.7S	140.0E	1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
DUSHETI		1960	BBB	BBB	BBB	BBB
42.1N	44.7E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
EBRO (TORTOSA)		1965	BBB	BBB	BBB	BBB
40.8N	0.5E	1966	BBB	BBB	BBB	BBB

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
EIGHTS STATION		1964			--G	GGG
75.2S	77.2W	1965	G--			
FANNING ISLAND		1957			BBB	BBB
3.9N	159.4W	1958	BBB	BBB	BBB	BBB
FREDERICKSBURG		1957	BBB	BBB	BBB	BBB
38.2N	77.4W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
FUQUENE		1961	GGG	GGG	BBB	BBB
5.5N	73.2W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	BBB	BBB
FURSTENFELDBRUCK		1964			--B	BBB
48.2N	11.3E	1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
GENOVA		1961	BBB	BBB	BBB	BBB
44.4N	8.9E	1962				BB-
GNANGARA		1961	GGG	GGG	GGG	GGG
31.5S	115.6E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GG-	
GODHAVN		1961	GGG	GGG	GGG	GGG
69.3N	53.3W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--G	GGG
G. GONZALEZ		1961	--B	BBB	BBB	BBB
64.8S	62.9W					

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
GREAT WHALE		1965	GGG		--G	GGG
55.3N	77.8W	1966	GGG	GGG	GGG	GGG
GUAM		1957			BBB	BBB
13.6N	144.8E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
HALLEY BAY		1961	BBB	BBB	BBB	BBB
75.5S	26.7W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
HARTLAND		1964			--B	BBB
51.0N	4.5W	1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GGG
HEALY		1957			BBB	BBB
63.9N	149.1W	1958	BBB	BBB	BBB	BBB
HEISS ISLAND		1960	BBB	BBB	BBB	BBB
80.6N	58.1E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
HEL		1961	GGG	GGG	GGG	GGG
54.6N	18.8E					
HERMANUS		1960	HHH	HHH	HHH	HHH
34.4S	19.2E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BGG	GGG	GGG	GGG
		1964			--B	BBB
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
HOLLANDIA		1961	GGG	GGG	GGG	GGG
2.5S	140.5E					

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HONOLULU		1957	BBB	BBB	BBB	BBB
21.3N	158.1W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
HUANCAYO		1961	-GG	GGG	GGG	GGG
12.1S	75.3W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--B	BBB
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
IRKUTSK		1960	BBB	BBB	BBB	BBB
52.3N	104.3E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
JARVIS ISLAND		1957			-BB	BBB
0.4S	160.1W	1958	BBB	BBB	BBB	BBB
JULIANEHAAB		1964		-GG	GGG	GGG
60.7N	46.0W	1965	GGG	GG-		
KAKIOKA		1960			GGG	GGG
36.2N	140.2E	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--G	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
KANOYA		1961	GGG	GGG	GGG	GGG
31.4N	130.9E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GGG

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KERGUELEN ISLAND		1961	BBB	BBB	BBB	BBB
49.4S	70.2E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
KIEV		1961	BBB	BBB	BBB	BBB
50.7N	30.3E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
KIRUNA		1961			-GG	GGG
67.8N	20.4E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--G	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
KODAIKANAL		1963	GGG	GGG	GGG	GGG
10.2N	77.5E	1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
KOROR ISLAND		1957			BBB	BBB
7.3N	123.5E	1958	BBB	BBB	BBB	BBB
		1964			--G	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG			
KRASNAYA PAKHRA		1961	BBB	BBB	BBB	BBB
55.5N	37.3E	1962	BBB	BBB	BBB	BBB
		1964			--G	GGG
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
LA QUIACA		1963	GGG	GGG	GGG	GGG
22.1S	65.6W	1964			--G	GGG
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GG-	
L'AQUILA		1961	GGG	GGG	GGG	GGG
42.4N	13.3E					
LEIRVOGUR		1961	GGG	GGG	GGG	GGG
64.2N	21.7W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--G	GGG
		1965	GGG	GGG	GBB	BBB
		1966	BBB	BBB	BBB	BBB

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
LEOPOLDVILLE		1966	GGG			
4.4S	15.3E					
LERWICK		1964	GGG	GGG	GGG	GGG
60.1N	1.1W	1965	GGG	GGG	GGG	GGG
LITTLE AMERICA		1957			BBB	BBB
78.2S	162.2W	1958	BBB	BBB	BBB	BBB
LOGRONO		1964			--G	GGG
42.5N	2.5W	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
LOVO		1964			--B	BBB
59.3N	17.8E	1965	GGG	GGG	GGG	GGG
LVOV		1960	BBB	BBB	BBB	BBB
49.9N	23.8E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
MACQUARIE ISLAND		1961	GGG	GGG	GGG	GGG
54.5S	158.9E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
MAJURO		1964			-GG	GGG
7.1N	171.2E	1965	GGG	GGG	GGG	GGG
		1966	GGG			
MAWSON		1961	GGG	GGG	GGG	GGG
67.6S	62.9E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
M'BOUR		1961	BBB	BBB	BBB	BBB
14.5N	17.0W	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GGG

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
MEANOOK		1959	HHH	HHH	HHH	HHH
54.6N	113.3W	1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	-BB	BBB	B-B	BBB
		1965	BBB	BBB	BGG	GGG
		1966	GGG	GGG	GGG	GGG
MEMAMBETSU		1960	BBB	BBB	BBB	BBB
43.9N	144.2E	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GGG
MINSK		1961	BBB	BBB	BBB	BBB
53.9N	27.5E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
MIRNY		1961	BBB	BBB	BBB	BBB
66.6S	93.0E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
MISALLAT		1963	GGG	GGG	GGG	GGG
29.5N	30.9E	1965	GGG	GGG	GGG	GGG
MOCA		1964			--B	BBB
3.4N	8.7E	1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GG-
MOULD BAY		1962	GGG	GGG	GGG	GGG
76.2N	119.4W	1963	GGG	GGG	GGG	GGG
		1964			--G	GGG
		1965	GG-	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
MUNTINLUPA		1962	GGG	GGG	GGG	GGG
14.4N	121.0E	1963	GGG	GGG	GGG	GGG
		1964	BBB	BBB		
		1965	GGG	GGG	GGG	GGG

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
MURMANSK		1960			BBB	BBB
69.0N	33.0E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	GGG	GGG	GGG	GGG
NAIROBI		1965	BBB	BBB	BBB	BBB
1.3S	36.8E	1966	BBB			
NEWPORT		1966			GGG	GGG
48.3N	117.1W	1967	GGG	GG-		
NIEMEGK		1965	GGG	GGG	GGG	GGG
52.1N	12.7E	1966	BBB	BBB	GGG	GGG
NORTH POLE	13	1964		-BB	BBB	BBB
		1965	BBB			
NOVOLAZAREVSKAYA		1961	-BB	BBB	BBB	BBB
70.8S	11.8E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	GGG	GGG	GGG	GGG
NURMIJARVI		1960	GGG	GGG	GGG	GGG
60.5N	24.7E	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGB	BBB
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
ODESSA		1960	BBB	BBB	BBB	BBB
46.8N	30.9E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
PARAMARIBO		1961	GGG	GGG	GGG	GGG
5.8N	55.2W	1962	GGG	GGG	GGG	GGG
		1964			--G	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
PETROPAVLOVSK		1960			--H	HHH
53.1N	158.6E	1961	HHH	HHH		
PILAR		1960			BBB	BBB
31.7S	63.9W	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	GGG	GGG	GG-	
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GG-
PORT MORESBY		1961	GGG	GGG	GBB	BBB
9.2S	147.1E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
RESOLUTE BAY		1960	HHH	HHH	HHH	HHH
74.7N	94.9W	1961	HHH	HHH	HHH	HHH
		1962	BBB	BBB	BBB	BBB
		1963	GGG	GGG	GGG	GGG
		1964	-GG	GGG	G-G	GGG
		1965	GGG	-GG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
ROI BAUDOUIN		1967	-GG	GGG	GGG	GGG
70.4S	24.3E					
RUDE SKOV		1960	GGG	GGG	GGG	GGG
55.9N	12.5E	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
SAN FERNANDO		1964			--G	GGG
36.5N	6.2W	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SAN JUAN		1957	BBB	BBB	BBB	BBB
18.4N	66.0W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBB	BB-		
SAO JOSE		1964			HHH	HHH
23.2S	45.9W	1965	HHH	HHH	HHH	H-H
		1966	HH-	-HH	--H	HHH
		1967	HHH	HH-		
SITKA		1957	BBB	BBB	BBB	BBB
57.1N	135.3W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
SODANKYLA		1965	GGG	GGG	GGG	GGG
67.4N	26.7E	1966	GGG	GGG	GGG	GGG
SREDNIKAN		1961	BBB	BBB	BBB	BBB
62.4N	152.3E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
STONYHURST		1964	BBB	BBB	BBB	BBB
53.9N	2.5W					
SUKKERTOPPEN		1965	GGG	GGG	GGG	GGG
65.4N	52.9W					
SURLARI		1961			-BB	BBB
44.7N	26.3E	1962				BBB
		1963	BBB	BBB	B--	
		1964			--B	BBB
		1965	BBB	BBB	BBB	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SVERDLOVSK		1961	BBB	BBB	BBB	BBB
56.7N	61.1E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
TANANARIVE		1962	GGG	GGG	GGG	GGG
18.9N	47.5E	1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGB	BBB
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
TASHKENT		1961	BBB	BBB	BBB	BBB
41.4N	69.2E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
TATUOCA		1964			--G	GGG
1.2S	48.5W	1965	GGG	GGG	GGG	GGG
TENERIFE		1965	GGG	GGG	GGG	GGG
28.3N	16.3W	1966	GGG	GG-		
THULE		1961	GGG	GGG	GGG	GGG
76.5N	68.8W	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
TIKSI BAY		1961	BBB	BBB	BBB	BBB
71.6N	129.0E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
TOLEDO		1964			--B	BBB
39.9N	4.1W	1965	BBB	BBB	GGG	GGG
		1966	GGG	GGG	GGG	GGG
TOOLANGI		1961	GGG	GGG	GGG	GGG
37.3S	145.3E	1963	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG

G = Magnetograms H = Hourly Values B = Both

MAGNETOGRAMS AND HOURLY VALUE TABLES (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TRELEW		1960	BBB	BBB	BBB	BBB
43.2S	65.3W	1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GBB	BBB	BBB	BBB
		1966	BBB	BBB		
TRIVANDRUM		1963	GGG	GGG	GGG	GGG
8.5N	76.9E	1965	GGG	GGG	GGG	GGG
TUCSON		1957	BBB	BBB	BBB	BBB
32.2N	110.9W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	GGG	GG-		
VALENTIA		1964	GGG	GGG	GGG	GGG
51.9N	10.3W	1965	GGG	GGG	GGG	GGG
VASSOURAS		1964			--G	GGG
22.4S	43.7W					
VICTORIA		1964	-GG	GGG	G-G	GGG
48.5N	123.4W	1965	GGG	GGG	GGG	GGG
		1966	GGG	GGG	GGG	GGG
VLADIVOSTOK		1961	BBB	BBB	BBB	BBB
43.7N	132.2E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
VOSTOK		1961	BBB	BBB	BBB	BBB
78.5S	106.9E	1964	GGG	GGG	GGG	GGG

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
VOYEIKOVO		1960	BBB	BBB	BBB	BBB
59.9N	30.7E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
WESTON		1964		HHH	HHH	HHH
42.3N	71.3W	1965	HHH	HHH	HHH	HHH
		1966	HHH	HHH	HHH	HHH
		1967	HHH	HHH		
WILKES		1957			BBB	BBB
66.3S	110.5E	1958	BBB	BBB	BBB	BBB
		1961	GGG	GGG	GGG	GGG
		1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	GGG	GGG	GGG	GGG
		1965	GGG	GGG	GGG	GGG
WITTEVEEN		1961	GGG	GGG	GGG	GGG
52.8N	6.7E	1962	GGG	GGG	GGG	GGG
		1963	GGG	GGG	GGG	GGG
		1964	BBB	BBB		
		1965	BBB	BBB	BBB	BBB
		1966	GGG	GGG	GGG	GGG
YAKUTSK		1960	BBB	BBB	BBB	BBB
62.0N	129.7E	1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964			--B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
YUZHNO		1961	BBB	BBB	BBB	BBB
46.9N	142.7E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
ZAIMISCHE		1961	BBB	BBB	BBB	BBB
55.8N	48.9E	1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	GGG	GGG	GGG	GGG
ZARIA						
11.2N	7.7E	1965	GGG	GGG	GGG	GGG

G = Magnetograms H = Hourly values B = Both

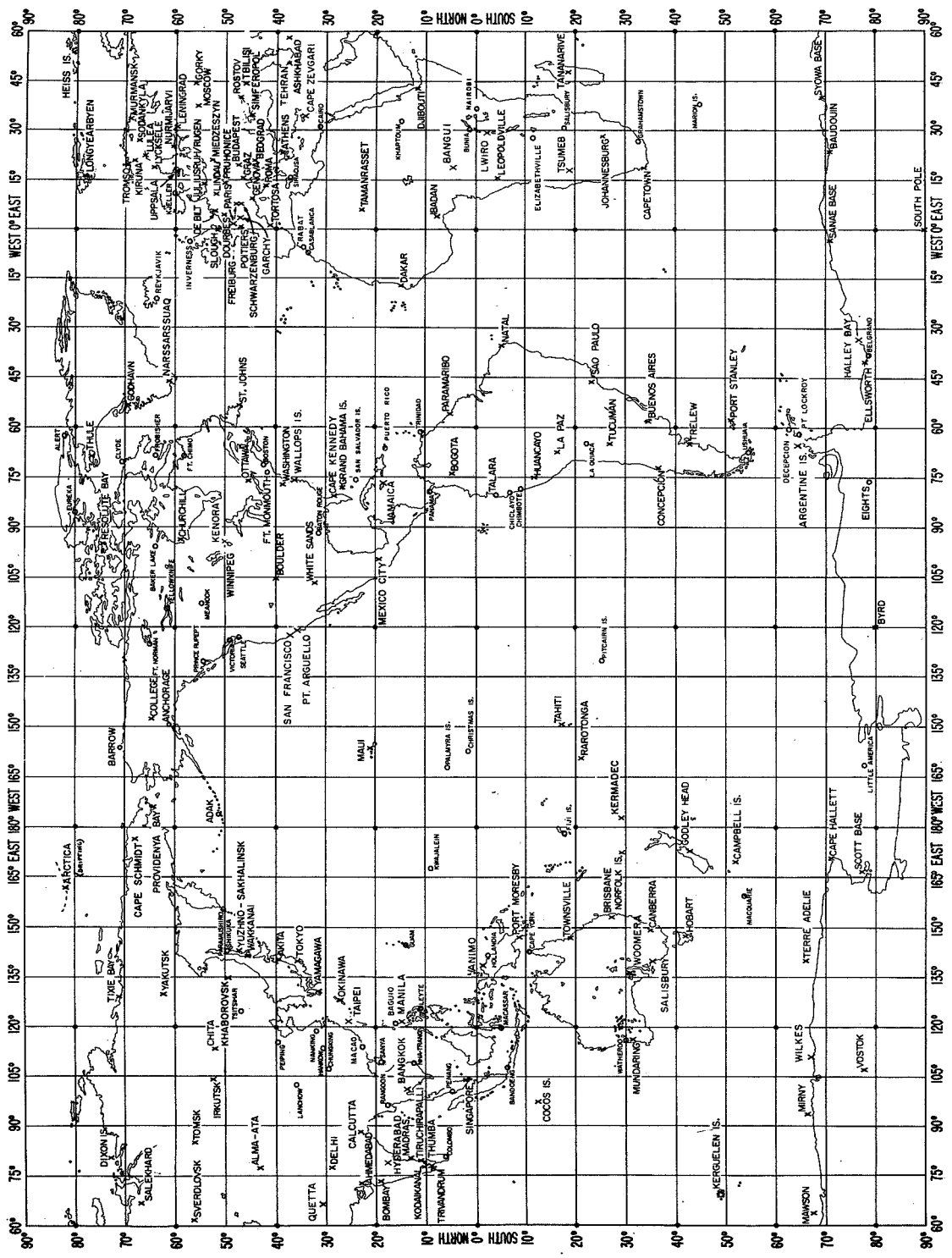
PART V

IONOSPHERIC PHYSICS

DATA DESCRIPTION

The Data Center has ionospheric data in the form of vertical incidence soundings, bottomside ionograms, ionospheric maps, electron density reports, reports on the ionospheric effects of solar flares, and riometer records. Vertical incidence sounding data include hourly values for each day and monthly median values for each hour presented in tabular form. The electron density data are presented in tables as hourly values for each day. The ionospheric effects of solar flare data are presented in tables which identify the phenomena, their duration, and other related factors. The riometer data are presented as analog recordings and/or tabulations.

A map and a list of ground ionospheric stations precede the data listing. A separate riometer station list is also included. The map has been made available through the cooperation of the Environmental Science Services Administration Institute for Telecommunication Sciences and Aeronomy (ESSA/ITSA).


IONOSPHERE VERTICAL SOUNDINGS STATIONS, SEPTEMBER 1966
x OPERATING
o NOT OPERATING
This map is made available through the cooperation of ESSA/ITSA.

STATION LIST

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES		MAGNETIC DIP
		LAT	LONG.	LAT	LONG.	
ATLANTIC OCEAN, NORTH						
GRAND BAHAMA ISLAND	UK/USA	26.7N	78.4W	37.9N	349.3E	59N
SAN SALVADOR	UK/USA	24.1N	74.5W	35.2N	354.8E	58N
ATLANTIC OCEAN, SOUTH						
PORT STANLEY	UNITED KINGDOM	51.7S	57.9W	40.4S	9.0E	47S
ARCTIC OCEAN						
ARCTICA 1 (NP-6) ICE ISLAND	USSR					
ARCTICA 2 (NP-7) ICE ISLAND	USSR					
ARCTICA (NP-8) ICE ISLAND	USSR					
ARCTICA (NP-10) ICE ISLAND	USSR					
ARCTICA (NP-11) ICE ISLAND	USSR					
ARCTICA (NP-13) ICE ISLAND	USSR					
FLETCHER'S (ICE ISLAND)	USA					
HEISS ISLAND	USSR	80.6N	58.1E	71.3N	155.3E	84N
LONGYEARBYEN	NORWAY	78.2N	15.7E	73.5N	129.4E	82N
INDIAN OCEAN						
COCOS ISLANDS	AUSTRALIA	12.2S	96.8E	23.3S	164.0E	45S
KERGUELEN ISLAND	FRANCE/USA	49.4S	70.2E	57.2S	128.0E	68S
MARION ISLAND	REPUBLIC OF SOUTH AFRICA	46.9S	37.9E	48.9S	94.2E	65S
SOYA (JAPANESE SHIP)	JAPAN	68.5S	37.0E			66S
PACIFIC OCEAN, NORTH						
OKINAWA	USA	26.5N	128.0E	15.3N	196.0E	38N
PACIFIC OCEAN, SOUTH						
CAMPBELL ISLAND	NEW ZEALAND	43.6S	172.8E	48.1S	253.0E	74S
MACQUARIE ISLAND	AUSTRALIA/USA	54.5S	158.9E	61.1S	243.1E	79S
NORFOLK ISLAND	AUSTRALIA	29.0S	167.6E	35.0S	243.7E	57S
RAOUL ISLAND	NEW ZEALAND	29.3S	177.9W			53S
RAROTONGA	NEW ZEALAND	21.2S	159.8W	20.7S	275.4E	38S
TAHITI	FRANCE	17.5S	149.5W	15.3S	282.7E	29S
ALGERIA						
TAMANRASSET	FRANCE	22.8N	5.5E	25.4N	80.6E	29N
ANTARCTICA						
AMUNDSEN-SCOTT	USA	90.0S	0.0E	78.5S	0.0E	75S
ARGENTINE ISLANDS	UK/USA	65.3S	64.3W	53.8S	3.3E	58S
BYRD STATION	USA	79.9S	120.0W	70.6S	336.0E	75S
CAPE HALLETT	NEW ZEALAND/USA	72.3S	170.2E	74.7S	278.2E	85S
DECEPCION ISLAND	ARGENTINA	62.9S	60.7W	51.7S	6.1E	56S
ELLSWORTH	ARGENTINA/USA	77.7S	41.1W	66.9S	14.2E	66S
HALLEY BAY	UNITED KINGDOM	75.5S	26.7W	65.6S	24.2E	65S
LITTLE AMERICA	USA	78.2S	162.2W	74.0S	311.9E	80S
MAWSON	AUSTRALIA	67.6S	62.9E	73.1S	103.0E	70S
MIRNY	USSR	66.6S	93.0E	77.0S	146.8E	77S
PORT LOCKROY	NZ/UK/USA	64.8S	63.5W	53.4S	3.9E	58S
SANAE BASE	REPUBLIC OF SOUTH AFRICA	70.3S	2.4W	63.9S	43.8E	63S
SCOTT BASE	NEW ZEALAND	77.9S	166.8E	79.0S	294.4E	83S
SYOWA BASE	JAPAN	69.0S	39.6E	69.7S	77.4E	66S
TERRE ADELIE	FRANCE	66.7S	140.0E	75.5S	230.9E	90S
VOSTOK	USSR	78.5S	106.9E	89.2S	91.4E	79S
WILKES	AUSTRALIA/USA	66.3S	110.5E	77.8S	179.0E	82S
ARGENTINA						
BUENOS AIRES	ARGENTINA	34.6S	58.5W	23.6S	9.4E	32S
LA QUIACA	ARGENTINA	22.1S	65.6W	10.6S	3.2E	15S
TRELEW	ARGENTINA	43.2S	65.3W	32.0S	3.2E	41S
TUCUMAN	ARGENTINA	26.9S	65.4W	15.2S	3.3E	23S
USHUAIA	ARGENTINA/USA	54.8S	68.3W	43.2S	0.8E	51S
AUSTRIA						
GRAZ	AUSTRIA	47.1N	15.5E	47.0N	96.8E	63N
AUSTRALIA						
BRISBANE	AUSTRALIA	27.3S	153.0E	35.8S	226.9E	57S
CANBERRA	AUSTRALIA	35.2S	149.1E	43.9S	224.6E	66S

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES		MAGNETIC DIP
		LAT	LONG.	LAT	LONG.	
AUSTRALIA						
HOBART	AUSTRALIA	42.5S	147.2E	51.7S	224.6E	73S
MUNDARING	AUSTRALIA	31.6S	116.1E	43.2S	184.0E	66S
SALISBURY	AUSTRALIA	34.5S	138.4E	44.5S	212.2E	67S
TOWNSVILLE	AUSTRALIA	19.3S	146.7E	28.4S	218.7E	48S
WATHEROO	AUSTRALIA	30.3S	115.9E	41.7S	185.8E	65S
WOOMERA	AUSTRALIA	30.7S	136.8E	41.2S	211.0E	63S
BELGIUM						
DOURBES	BELGIUM	50.1N	4.6E	52.0N	87.7E	66N
ROI BAUDOUIN	BELGIUM	70.4S	24.3E	68.0S	63.2E	66S
BOLIVIA						
LA PAZ	BOLIVIA/USA	16.5S	68.1W	5.0S	0.9E	6S
BRAZIL						
NATAL	BRAZIL/USA	5.3S	35.1W	4.2N	33.9E	4S
SAO PAULO	BRAZIL	23.6S	46.6W	12.9S	21.0E	24S
CANADA						
ALERT	CANADA	82.5N	62.5W	85.7N	168.7E	86N
BAKER LAKE	CANADA	64.3N	96.0W	73.9N	314.8E	86N
CHURCHILL	CANADA	58.8N	94.1W	68.8N	322.5E	84N
CLYDE RIVER	CANADA	70.5N	68.6W	81.9N	1.1E	84N
EUREKA	CANADA	80.0N	85.9W	86.5N	236.4E	87N
FORT CHIMO	CANADA	58.1N	68.4W	69.6N	1.0E	81N
FORT NORMAN	CANADA	64.9N	125.5W	69.1N	278.0E	81N
FROBISHER BAY	CANADA/USA	63.5N	67.4W	75.3N	1.0E	82N
KENORA	CANADA	49.8N	94.4W			78N
MEANOOK	CANADA	54.6N	113.3W	61.9N	300.7E	78N
OTTAWA	CANADA	45.4N	75.7W	57.0N	351.3E	75N
RESOLUTE BAY	CANADA	74.7N	94.9W	83.1N	287.7E	89N
VICTORIA	CANADA	48.5N	123.4W	54.3N	292.7E	71N
WINNIPEG	CANADA	49.9N	97.2W	59.6N	322.7E	78N
YELLOWKNIFE	CANADA	62.4N	114.4W	69.0N	293.3E	82N
CENTRAL AFRICAN REPUBLIC						
BANGUI	FRANCE	4.6N	18.6E	5.0N	88.6E	16N
DAPANGO	GERMAN FEDERAL REPUBLIC	10.8N	0.1E	14.7N	71.5E	4N
CHILE						
CONCEPCION	USA	36.6S	72.9W	25.4N	356.4E	36S
CHINA						
MACAU	PORTUGAL	22.2N	113.6E	10.7N	182.3E	30N
CHINA (TAIWAN)						
CHUNG-LI	NATIONALIST CHINA	25.0N	121.2E			35N
TAIPEI	NATIONALIST CHINA	25.0N	121.5E	13.8N	189.5E	36N
COLOMBIA						
BOGOTA	COLOMBIA/USA	4.5N	74.1W	15.9N	354.5E	32N
CONGO						
BUNIA/RUMPARA	CONGO	1.5N	30.2E	0.4S	99.3E	22N
ELISABETHVILLE	CONGO	11.6S	27.4E	12.7S	94.1E	48S
LEOPOLDVILLE/BINSA	CONGO	4.4S	15.3E	3.1S	83.5E	35S
LWIRO	CONGO	2.3S	28.8E	3.8S	97.2E	31S
CYPRUS						
CAPE ZEVGARI	UNITED KINGDOM	34.6N	33.0E	31.8N	108.8E	49N
CZECHOSLOVAKIA						
PRUHONICE	CZECHOSLOVAKIA	49.9N	14.6E	49.8N	97.3E	66N
ENGLAND						
SLOUGH	UNITED KINGDOM	51.5N	0.6W	54.3N	84.1E	67N

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES		MAGNETIC DIP
		LAT	LONG.	LAT	LONG.	
FINLAND						
NURMIJARVI	FINLAND	60.5N	24.7E	57.9N	112.6E	73N
SODANKYLA	FINLAND	67.4N	26.7E	63.7N	120.0E	77N
FRANCE						
GARCHY	FRANCE	47.3N	3.1E	49.6N	84.8E	63N
POITIERS	FRANCE	46.6N	0.3E	49.5N	81.8E	63N
SACLAY	FRANCE	48.7N	2.2E	51.3N	85.0E	65N
GERMAN DEMOCRATIC REPUBLIC						
JULIUSRUH/RUGEN	GERMAN DEMOCRATIC REPUBLIC	54.6N	13.4E	54.5N	98.7E	69N
GERMAN FEDERAL REPUBLIC						
FREIBURG	GERMAN FEDERAL REPUBLIC	48.0N	7.9E	49.3N	89.9E	64N
LINDAU/HARZ	GERMAN FEDERAL REPUBLIC	51.7N	10.1E	52.4N	93.9E	67N
GREECE						
ATHENS	GREECE	37.9N	23.7E	36.6N	101.4E	53N
GREENLAND						
GODHAVN	DENMARK/USA	69.3N	53.3W	79.8N	32.5E	82N
NARSSARSSUAQ	DENMARK/USA	61.2N	45.4W	71.2N	37.6E	77N
THULE	DENMARK/USA	76.5N	68.8W	88.1N	1.1E	86N
HUNGARY						
BEKESCSABA	HUNGARY	46.7N	21.2E	46.0N	100.6E	63N
BUDAPEST	HUNGARY	47.5N	19.0E	46.7N	100.4E	63N
ICELAND						
LEIRVOGUR	ICELAND	64.2N	21.7W	70.2N	71.0E	76N
INDIA						
AHMADABAD	INDIA	23.0N	72.6E	13.9N	143.9E	32N
BOMBAY	INDIA	19.0N	72.8E	9.8N	143.6E	24N
CALCUTTA	INDIA	22.9N	88.6E	12.2N	159.6E	30N
DELHI	INDIA	28.6N	77.2E	18.9N	148.9E	42N
HYDERABAD	INDIA	17.3N	78.5E	7.6N	148.8E	19N
KODAIKANAL	INDIA	10.2N	77.5E	0.6N	147.1E	2N
MADRAS	INDIA	13.0N	80.3E	3.3N	150.3E	8N
THUMBA	INDIA	8.6N	76.9E			2S
TIRUCHIRAPALLI	INDIA	10.8N	78.8E	1.3N	148.3E	3N
TRIVANDRUM	INDIA	8.5N	76.9E	1.1S	145.3E	2S
IRAN						
TEHRAN	IRAN	35.7N	51.4E	29.4N	126.6E	53N
ITALY						
GENOVA (MONTE CAPELLINO)	ITALY	44.6N	8.8E	45.8N	89.6E	60N
ROME	ITALY	41.9N	12.5E	42.5N	92.0E	58N
JAPAN						
AKITA	JAPAN	39.7N	140.1E	29.5N	205.5E	54N
KOKUBUNJI	JAPAN	35.7N	139.5E	25.4N	205.4E	51N
WAKKANAI	JAPAN	45.4N	141.7E	35.3N	206.0E	60N
YAMAGAWA	JAPAN	31.2N	130.6E	20.3N	197.8E	44N
KENYA						
NAIROBI	KENYA	1.3S	36.8E	4.4S	105.2E	26S
MALAGASY REPUBLIC						
TANANARIVE	FRANCE	18.9S	47.5E	23.7S	112.6E	54S
MALAYSIA						
SINGAPORE	UK/USA	1.3N	103.9E	10.0S	172.7E	18S
MEXICO						
EL CERILLO	MEXICO/USA	19.3N	99.6W	29.2N	326.7E	46N

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES		MAGNETIC DIP
		LAT	LONG.	LAT	LONG.	
MOROCCO						
CASABLANCA	MOROCCO	33.6N	57.5W	37.3N	69.8E	66N
RABAT	FRANCE/MOROCCO/USA	34.0N	6.8W	38.7N	69.9E	49N
NETHERLANDS						
DE BILT	NETHERLANDS	52.1N	5.2E	53.8N	89.4E	67N
NEWFOUNDLAND						
ST. JOHN'S	CANADA	47.5N	52.8W	58.4N	21.4E	72N
NEW GUINEA						
HOLLANDIA	NETHERLANDS	2.5S	140.5E	12.5S	210.3E	21S
PORT MORESBY	AUSTRALIA	9.2S	147.1E	18.6S	217.9E	33S
VANIMO	AUSTRALIA	2.7S	141.3E	12.7S	211.1E	21S
NEW ZEALAND						
GODLEY HEAD	NEW ZEALAND	43.6S	172.8E	48.1S	252.8E	69S
NIGERIA						
IBADAN	NIGERIA	7.3N	3.9E	10.6N	74.6E	5N
NORWAY						
OSLO (KJELLER)	NORWAY	59.9N	11.1E	60.0N	100.2E	73N
TROMSO	NORWAY	69.7N	18.9E	67.2N	115.8E	78N
PAKISTAN						
QUETTA	PAKISTAN	30.2N	66.9E	21.6N	140.7E	45N
PANAMA						
CANAL ZONE	USA	9.4N	79.9W	20.6N	348.0E	38N
PERU						
CHICLAYO	USA	6.8S	79.8W	4.4N	349.2E	9N
CHIMBOTE	USA	9.1S	78.6W	2.2N	350.4E	6N
HUANCAYO	PERU/USA	12.1S	75.3W	0.6S	353.8E	1N
ILO	PERU/USA	17.4S	71.2W	7.0S	358.1E	8S
JULIACA	PERU/USA	15.5S	70.2W	4.5S	359.3E	4S
TALARA	PERU/USA	4.6S	81.3W	6.6N	347.7E	13N
PHILIPPINES						
BAGUIO	PHILIPPINES/USA	16.4N	120.6E	5.1N	189.3E	19N
MANILA	PHILIPPINES/USA	14.6N	125.5E	3.5N	190.9E	15N
POLAND						
MIEDZESZYN	POLAND	52.2N	21.2E	50.7N	104.6E	67N
PUERTO RICO						
PUERTO RICO	USA	18.5N	67.2W	30.0N	2.0E	51N
REPUBLIC OF SOUTH AFRICA						
CAPE TOWN	REPUBLIC OF SOUTH AFRICA	34.1S	18.3E	32.9S	79.8E	66S
GRAHAMSTOWN	REPUBLIC OF SOUTH AFRICA	33.3S	26.5E	33.6S	87.8E	66S
JOHANNESBURG	REPUBLIC OF SOUTH AFRICA	26.1S	28.1E	26.9S	91.3E	53S
RHODESIA						
SALISBURY	RHODESIA/NYASALAND	17.8S	31.0E	19.5S	96.2E	56S
SCOTLAND						
INVERNESS	UNITED KINGDOM	57.5N	4.3W	60.6N	83.3E	71N
SENEGAL						
DAKAR	SENEGAL	14.7N	17.5W	21.7N	54.7E	21N
SOMALILAND						
DJIBOUTI	FRANCE	11.6N	43.1E	7.0N	113.5E	6N

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES		MAGNETIC DIP
		LAT	LONG.	LAT	LONG.	
SOUTH-WEST AFRICA						
TSUMEB	GERMAN FEDERAL REPUBLIC	19.2S	17.7E	18.3S	82.8E	57S
SPAIN						
EBRO (TORTOSA)	SPAIN	40.8N	0.5E	43.9N	79.7E	57N
SURINAM						
PARAMARIBO	NETHERLANDS	5.8N	55.2W	17.0N	14.5E	31N
SWEDEN						
KIRUNA	SWEDEN	67.8N	20.4E	65.3N	115.9E	77N
LULEA	SWEDEN	65.6N	22.2E	63.0N	114.7E	76N
LYCKSELE	SWEDEN	64.7N	18.8E	62.7N	110.8E	75N
UPPSALA	SWEDEN	59.8N	17.6E	58.6N	105.9E	73N
SWITZERLAND						
SCHWARZENBURG	SWITZERLAND	46.8N	7.3E	48.4N	88.9E	63N
THAILAND						
BANGKOK	THAILAND	13.8N	100.6E	2.5N	169.8E	10N
UNITED STATES OF AMERICA						
ADAK, ALASKA	USA	51.9N	176.5W	47.3N	240.0E	63N
ANCHORAGE, ALASKA	USA	61.2N	149.9W	60.9N	258.1E	74N
BARROW, ALASKA	USA	71.3N	156.8W	68.6N	241.0E	80N
BILLERICA, MASSACHUSETTS	USA	42.9N	71.5W	54.0N	357.2E	73N
BOULDER, COLORADO	USA	40.0N	105.3W	48.9N	316.4E	68N
CAPE KENNEDY, FLORIDA	*USA*	28.5N	80.5W	39.6N	246.9E	62N
COLLEGE, ALASKA	USA	64.9N	147.8W	64.7N	256.5E	77N
FORT BELVOIR, VIRGINA	USA	38.7N	77.1W	50.1N	350.1E	70N
FORT MONMOUTH, NEW JERSEY	USA	40.3N	74.0W	51.7N	353.9E	71N
MAUI, HAWAII	USA	20.8N	156.7W	20.8N	268.1E	39N
SAN FRANCISCO, CALIFORNIA	USA	37.4N	122.2W	43.7N	298.4E	62N
WALLOPS ISLAND, VIRGINIA	USA	37.9N	75.5W	48.5N	353.6E	70N
WHITE SANDS, NEW MEXICO	USA	32.4N	106.9W	41.2N	316.4E	60N
USSR						
ALMA-ATA	USSR	43.3N	76.9E	33.5N	150.8E	63N
ASHKHABAD	USSR	37.9N	58.4E	30.6N	133.5E	57N
CAPE SCHMIDT	USSR	68.9N	179.5W	62.8N	227.4E	77N
CHITA	USSR	52.0N	113.5E	40.6N	182.0E	71N
DIXON ISLAND	USSR	73.5N	80.6E	63.0N	161.5E	84N
GORKIY	USSR	56.1N	44.3E	50.3N	126.8E	72N
KHABAROVSK	USSR	48.5N	135.2E	37.9N	200.1E	64N
KRASNAYA PAKHRA (MOSCOW)	USSR	55.5N	37.3E	50.8N	120.5E	71N
MURMANSK	USSR	69.0N	33.0E	64.1N	126.5E	78N
PROVIDENIYA BAY	USSR	64.4N	173.4W	58.7N	235.8E	74N
ROSTOV-ON-DON	USSR	47.2N	39.7E	42.5N	120.9E	64N
SALEKHARD	USSR	66.6N	66.7E	56.4N	148.5E	80N
SIMFEROPOL	USSR	44.7N	34.0E	41.2N	113.3E	62N
SVERDLOVSK	USSR	56.7N	61.1E	48.5N	140.7E	74N
TIKSI BAY	USSR	71.6N	129.0E	60.4N	191.4E	83N
TOMSK	USSR	56.5N	84.9E	46.1N	159.8E	76N
VOYEIKOVO (LENINGRAD)	USSR	59.9N	30.7E	56.2N	117.4E	74N
YAKUTSK	USSR	62.0N	129.7E	51.0N	193.8E	76N
YUZHNO SAKHALINSK	USSR	46.9N	142.7E	36.9N	206.7E	61N
ZUI (IRKUTSK)	USSR	52.5N	104.0E	41.1N	174.4E	72N
YUGOSLAVIA						
BEOGRAD	YUGOSLAVIA	44.8N	20.5E	43.9N	101.2E	61N

VERTICAL INCIDENCE SOUNDINGS

Vertical incidence soundings permit the study of diurnal, seasonal, and geographic variations of the principal ionospheric parameters deduced from ionograms.

Bottomside ionograms indicate the height of the signal reflections from the ionosphere as a function of the transmitted frequency (0.5-25 MHz). More than 120 ionosondes are located throughout the world at various ground stations. The ionograms derived from them are analyzed, and the following ionospheric parameters are determined:

$\left\{\begin{matrix}\text{foE}\\ \text{foF1}\\ \text{foF2}\end{matrix}\right\}$ = Ordinary wave critical frequency for the E, F1, and F2 layers

fEs = Highest frequency on which a continuous sporadic E trace is observed

fbEs = Lowest frequency at which echoes from the F layer are observed when sporadic echoes from any height in the E layer are of the intense or blanketing type

f min = Minimum frequency of echoes seen from any region

h'E = Minimum virtual height of the E layer measured on the ordinary wave branch

h'F = Minimum virtual height of the F layer measured on the ordinary wave branch

h'F2 = Minimum virtual height of the F2 layer measured on the ordinary wave branch (height of the upper stratification of the F layer), when present

h'Es = Minimum virtual height of Es

M(3000)F1 = Maximum usable frequency factor for F1 region transmission over an oblique path of 3000 km

M(3000)F2 = Maximum usable frequency factor for F2 region transmission over an oblique path of 3000 km

Available data indicated in this Catalog include hourly values of the various parameters in tabular form as well as median hourly values for each month.

VERTICAL INCIDENCE SOUNDINGS

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ADAK		1957	MMM	MMM	BBB	BBB
51.9N	176.5W	1958	BBB	BBB	BBB	BBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BB-	-BB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBM	MMM	MMM
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
AHMADABAD		1957		--B	HBB	BBB
23.0N	72.6E	1958	BBH	BBH	BBB	HBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	HHH	HBB
		1961	BBB	BHH	HBB	BBB
		1962	BBB	BBH	HHH	HHH
		1963	BBB	BHH	HHH	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BMM
		1967	BBB	BMM	MB-	
AKITA		1957	MMM	MMM	BBB	BBB
39.7N	140.1E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMM	BMM
		1967	BBM	MB-		
ALERT		1957			-BB	BBB
82.5N	62.5W	1958	BBB	BBB	BBB	BBB
ALMA-ATA		1957	M-M	MMM	M--	
43.3N	76.9E	1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	H-H	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
		1966	H--			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
AMUNDSEN-SCOTT		1957			BBB	BBB
90.0S	0.0E	1958	BBB	BBH	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	B--
		1963	BB-	--B	BBB	B--
		1964	B--	BBB	BB-	--B
		1965	BBB	BB-	BBB	BBB
		1966	BH-	--B		
ANCHORAGE		1957	MMM	MMM	BBB	BBB
61.2N	149.9W	1958	BBB	BBB	BBB	BHB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	MBB	BBB
		1962	BBB	BBB	BBB	-BB
		1963	BBB	BBB	BBB	BBB
		1964	BBH	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
ARCTICA I	(NP-6)	1957			HHH	HHH
		1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HH-	
ARCTICA 2	(NP-7)	1957			HHH	HHH
		1958	HHH	HHH	H-H	HHH
		1959	HHH			
ARCTICA	(NP-8)	1961		--H	HHH	HHH
		1962	HHH	HHH	-HH	H--
ARCTICA	(NP-10)	1962				--H
		1963	HHH	HHH	HHH	HHH
		1964	HHH	H--		
ARCTICA	(NP-11)	1962			HHH	H--
ARCTICA	(NP-13)	1964			HHH	HHH
ARGENTINE	IS.	1962	-HH	HHH	HHH	HHH
65.3S	64.3W	1963	H--			
		1964	BBB	BBB	BBB	BBB
		1965	BB-			

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ASHKHABAD		1957	M-M	MM-	BHH	HHH
37.9N	58.4E	1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HHH	HHH
		1960		HHH	H--	H-H
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH		HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
ATHENS		1960				-HH
37.9N	23.7E	1961	BBB	BBB	BBB	HBB
		1962	BBH	HHH	HHH	HHH
		1963	HH-		-BB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	B--		
BAGUIO		1957	MMM	MMM	BBB	BBB
16.4N	120.6E	1958	BBB	BBB	BBB	BHB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBM	MMM
BAKER LAKE		1957	MMM	MMM	BBB	BBB
64.3N	96.0W	1958	BBB	BBB	BBB	BBB
		1959	BB-			
BANGKOK		1963			--B	BBB
13.8N	100.6E	1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBM	MBB
		1967	MBB	MMM	MB-	
BANGUI		1958	-BB	BMM	BBB	BBB
4.6N	18.6E	1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH		
		1964	BBB	BBB	B--	BHB
BARROW		1957	MMM	MMM	BBB	BBB
71.3N	156.8W	1958	BBB	BBB	BBB	BHB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BB-

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
BEKESCSABA		1964	BBB	BBB	M--	MMM
46.7N	21.2E	1965	MMM	MMM	MM-	
BEOGRAD		1962		-HH	H--	--H
44.8N	20.5E	1963	HHH	HHH	HHB	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
		1966	HH-			
BILLERICA		1965				-BB
42.9N	71.5W	1966	BBB	BBB	B--	
BOGOTA		1957			BBB	B--
4.5N	74.1W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBH	BBB	BBB
		1960			-B-	
		1962		B--		BBB
		1963	BBH	BBB	BBB	BBB
		1964	BBM	BBB	BBB	BBB
		1965	BBB	BBB	HBB	BBB
		1966	BBB	BBB	BBB	BHB
		1967	BBH	BBB		
BOMBAY		1957		--B	HBB	BBB
19.0N	72.8E	1958	BBH	BBH	BBB	HBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHB	BBH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	BBB	BBB	BBM	MMM
		1965	MMM	MMM	M--	
BOULDER		1958				-BB
40.0N	105.3W	1959	BBB	BBB	BB-	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB		
		1963		-BM	MBM	MMM
		1964	MMM	MMM	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBB	BHB	BBB	M--

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
BRISBANE 27.3S	153.0E	1957	MMM	MMM	BBB	BBB
		1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	HBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBM	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	B--			
BUDAPEST 47.5N	19.0E	1957	MMM	MMM	BBB	BBB
		1958	BBH	BBB	BBB	BBH
		1959	HBB	BBB	BBB	BBB
		1964			H--	HHH
		1965	HHH	HHH	HHB	MMM
		1966	MMM			
BUENOS AIRES 34.6S	58.5W	1957	MMM	M--		-BB
		1958	BBB	BBB	BBB	BBB
		1959	B-B	BBB	BBB	BBB
		1960	BBB	HBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	MMM	MMM	MMM	MMM
		1966		MMM	MMM	
BUNIA 1.5N	30.2E	1957				BBB
		1958	MMM	MMM	MMM	MMM
		1959	BBB	BBB	HBB	BBB
		1960	MMM	MMM	MMM	MM-
BYRD STATION 79.9S	120.0W	1957			BBB	BBB
		1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	B--	MMM	MMM	MMB
		1963	BBM	BMB	BBB	BBB
		1964	BMB	BBB	BBB	MBB
		1965	HBB	BBB	BBB	BMM
		1966	-BB	BBH	HHB	-BB

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
CALCUTTA 22.9N	88.6E	1957		--B	HBB	BBB
		1958	BBH	BBH	BBB	HBH
		1959	BBB		-BB	BBB
		1960	BBB			
		1964		-BB	BBM	MMM
		1965	MMM	-MM	MMM	MMM
		1966		--M	M--	
CAMPBELL ISLAND 52.6S	169.2E	1957	MMM	M-H	BBB	BBB
		1958	BB-	HBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBH	HH-	-HH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	MMM	MMM	MMM	MMM
		1965	BBB	BBB	BBB	BBB
		1966	M--			
		1967	M--			
CANAL ZONE 9.4N	79.9W	1957	MMM	MMM	BBB	BBB
		1958	BBB	BBB	BBB	BBB
CANBERRA 35.2S	149.1E	1957	-MM	M-M	BBB	BBB
		1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960		BHB	BBB	BBB
		1961	BHB	B--	BBB	BBB
		1962	BBB	BBB	BHH	HHH
		1963	BBB	BBH	HHH	HBB
		1964	BBM	MBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	B--			
CAPE HALLETT 72.3S	170.2E	1957		--M	BBB	BBB
		1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HBB
		1964	BB-			
CAPE KENNEDY 28.5N	80.5W	1958	--B	BBB	BBB	BBB

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
CAPE SCHMIDT		1960	HHH	HHH	HHH	HHH
68.9N	179.5W	1961	HHH	HHH	HHH	HHH
		1962	-HH	HH-		
CAPE TOWN		1957	MMM	MMM	BBB	BBB
34.1S	18.3E	1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	HHH	HHH	HHH	HHH
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	M-B	BBB
		1963	BBB	BBB	BBB	MMM
		1964	BBM	MMM		
		1967	MMM	MMM		
CAPE ZEVGARI		1964		BBB	MBM	MM-
34.6N	33.0E	1965	M--			
CASABLANCA		1957	MMM	MMM	BBB	BBB
33.6N	7.5W	1958	B--			
CHICLAYO		1957			BBB	BBB
6.8S	79.8W	1958	BBB	BBH	BBB	BBB
CHIMBOTE		1957			BBB	BBB
9.1S	78.6W	1958	BBB	BBB	BBH	HBB
		1959	BBB	BB-		
CHITA		1957	HHB	BBH	HHH	HHH
52.0N	113.5E	1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	H-H	H--		
CHUNG-LI		1965			BBB	BBB
25.0N	121.2E	1966	BBB	BBB	BHH	H-H
		1967	H--			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
CHURCHILL		1957	MMM	MMM	BBB	BBB
58.8N	94.1W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHB	HBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBM	MBM
		1967	MMM	-MM	MMM	
CLYDE RIVER		1957				BBB
70.5N	68.6W	1958	BBB	BBB	BBB	B--
COCOS ISLANDS		1961				-HH
12.2S	96.8E	1962	HHH	BBH	BBH	HHH
		1963	BBB	B-B	BBB	BBB
		1964	B--	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BMB	BMB	BBB	BBB
COLLEGE		1957	BBB	BBB	BBB	BBB
64.9N	147.8W	1958	BBB	BBB	BBB	BHH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	B--	--B
		1964	BBB	HHB	-BB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BHH	BB-		
CONCEPCION		1957				BBB
36.6S	72.9W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BB-			
		1963	BBB	BBB	BBB	MBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BB-	BBB	BBB
		1966	BBB	BB-	-B-	

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VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND	STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
DAKAR		1957	MMM	MMM	BBB	BBB	DJIBOUTI		1957	MMM	MMM	BBB	BBB
14.7N	17.5W	1958	BBB	BMM	BBB	BBB	11.6N	43.1E	1958	BBB	BM-	--B	BBB
		1959	BBB	BBB	BBB	BBB			1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB			1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	HHH			1961	BBB	BBB	BBB	HHH
		1962	HHH	HHH	HHH	HHH			1962	HHH	HHH		
		1963	BBB	BHH	HBH	HHH			1963	BBB	BHH	H-H	
		1964	BBB	BBB	BMM	MMM			1964	MMM	MMM	MMM	MMM
		1965	MM-						1965	M--			
DAPANGO		1965			BMM	-MB	DOURBES		1957			BBB	BBB
10.8N	0.1E	1966	BBB	M--			50.1N	4.6E	1958	BBB	BBB	BBB	BBB
									1959	BBB	BBB	BBB	BBB
									1960	BBB	BBB	BBB	BBB
DE BILT		1957	MMM	MMM	BBB	BBB			1961	BBB	BBB	BBB	BBB
52.1N	5.2E	1958	BBB	BBB	BBB	BBB			1962	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB			1963	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB			1964	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB			1965	BBB	BBB	BBB	BBB
		1962	HHH	HHH	HHH	HHH			1966	BBB	BBB	BBM	MMB
		1963	BBB	BBB	BBB	BBB			1967	BB-	MMM	HMM	
		1964	BBB	BBB	BBB	BBB							
		1965	BBB	BBB	BBB	BBB							
		1966	BBM	M--			EBRO (TORTOSA)		1957			BBH	HHB
							40.8N	0.5E	1958	HHH	HBH	HBB	HHH
									1959	HHH	HHH		
DECEPCION		1957			BBB	BB-			1960	HHH	HHH	HHH	HHH
62.9S	60.7W	1958	BBB	BBB	BMM	MBB			1961	HHH	HHH	HHH	HH-
									1962	HHH	HHH	HHH	HH-
									1963	MMM	MMM	MMM	MMM
DELHI		1957		--B	HBB	BBB			1964	M--	-MM	MM-	MMM
28.6N	77.2E	1958	BBH	BBH	BBB	HBH			1965	MMM	MMM	MMM	MMM
		1959	BBB	BBB	BBB	BBB			1966	MMM	MMM		
		1960	BBB	HHH	HHH	HHH							
		1961	HHH	HHH	HHH	HHH							
		1962	HHB	BBH	HHH	HHH	EL CERILLO		1958				-BB
		1963	HHH	HHH	HHH	HHH	19.3N	99.6W	1959	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBM	MMM			1960	BBB	BBB	BBB	BBB
		1965	MMM	MMM	MMM	MMM			1961	BBB	BBB	BBB	BBB
		1966		--M	M--				1962	BHH	HHH	HHH	HHH
									1963	BBB	BBB	BBB	BBB
									1964	BBB	BBB	BBB	BBB
DIXON ISLAND		1957			HHH	HHH			1965	BBB	BBB	BBB	BBB
73.5N	80.6E	1958	HHH	HHH	HHH	HHH			1966	BBB	BBB	BBB	MMM
		1959	HHH	HHH	HHH	HHH			1967	MMM	-MM	M--	
		1960	HHH	HHH	HHH	-HH							
		1961	HHH	HHH	HHH								
		1963	-HH	HHH	HHH	HHH	ELISABETHVILLE		1957	MMM	MMM	BBM	BBB
		1964	HFH	-HH	HHH	H-H	11.6S	27.4E	1958	BBB	BBB	BBB	BBB
		1965	HHH	HHH	HHH	HHH			1959	BBB	BBB	MMM	MMM
		1966	HHH	HH-					1960	MMM	MMM		

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VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ELLSWORTH		1957		--M	BBB	BBB
77.7S	41.1W	1958	BBB	BBB	BBB	BBB
		1959	HHH	-HH	HHH	HHH
		1960	HHH	HHH		
EUREKA		1957			H--	BBB
80.0N	85.9W	1958	BBB	BBB	BBB	BBB
		1959	B--			
FLETCHER'S	IS.	1957			BBB	BBB
		1958	BBB	BBB	BBB	BBB
FORT BELVOIR		1957	BBB	BBB	BBB	BBB
38.7N	77.1W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBB	BBH		
FORT CHIMO		1958			--H	-HH
58.1N	68.4W					
FORT MONMOUTH		1957	MMM	MMM	BBB	BBB
40.3N	74.0W	1958	BBB	BBB	BHB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB		BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
FORT NORMAN		1957			H--	
64.9N	125.5W					

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
FREIBURG		1957	MMM	MMM	BBB	BBB
48.0N	7.9E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	BBB	BBB	BBB	HHH
		1962	HHH	HHH	HHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	MMM	BBB	HHH
		1967	BBB	BBB	M--	
FROBISHER BAY		1957			--B	BB-
63.5N	67.4W	1958		--B	B-B	BBB
		1959	B--			
GARCHY		1959				BBM
47.3N	3.1E	1960	HHB	BBH	HHH	
		1961	-HH	HHH	HBB	BBB
		1962	BBB	BHH	-HH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BM-			
GENOVA		1957		MMM	BBH	HHH
44.6N	8.8E	1958	HHH	BBB	HHH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963		BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
GODHAVN		1957	MMM	MMM	BBB	BBB
69.3N	53.3W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	B--
		1960	-BB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	B-B	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBH	BBM		

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VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
GODLEY HEAD		1957	MMM	MMM	BBB	BBB
43.6S	172.8E	1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBH	HHH	HHH	HHH
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BMM	MMM	MM-
		1967	M--	MMM	MM-	
GORKIY		1959	HHH	HHH	HHH	HHH
56.1N	44.3E	1960		HHH	H-H	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
		1966	H--			
GRAHAMSTOWN		1958	--B	BBM	BBB	HBM
33.3S	26.5E	1959	B--			
		1965	-HH	-HH	HHH	HHH
GRAND BAHAMA IS.		1957			MBB	BBB
26.7N	78.4W	1958	BBB	BBB	BBB	B-B
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BB-
		1961	--B	BBB		BBB
		1962	BBB	BBB	-BB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB		
		1967	B-H			
GRAZ		1957	MMM	MMM	BBB	BBB
47.1N	15.5E	1958	MMM	MM-	MM-	M-M
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	MM-		

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HALLEY BAY		1957			BHH	BBB
75.5S	26.7W	1958	BBB	BBB	BBB	BBB
		1960			--H	H--
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1964				--M
		1965	MMM	MMM	MMM	MM-
HEISS ISLAND		1959				HHH
80.6N	58.1E	1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH		
HOBART		1957	MMM	MMM	BBB	BBB
42.5S	147.2E	1958	BBB	BBB	BBB	BBB
		1959	BBB			
		1961		BBB	BBB	BBB
		1962	BBB	BBB	BHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	MBB	BBB
		1967	B--			
HOLLANDIA		1957				--B
2.5S	140.5E	1958	BBB	BBB	BBB	BBB
		1959	BB-			
HUANCAYO		1957	MMM	BMM	BBB	BBB
12.1S	75.3W	1958	BBB	BBB	BHH	HHH
		1959	BB-	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBH
		1967	BBB	MB-		
HYDERABAD		1963	MMM	MBB	BBB	BBB
17.3N	78.5E	1964	BBB	BBB	BBM	MMM
		1965	MMM	MMM	MMM	MMM
		1966	MMM	MMM	MMM	M--

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VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
IBADAN		1957	MMM	MMM	BBB	BBB
7.3N	3.9E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHH	BBB	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBM	M--		
ILO		1959	-BB	BB-		
17.4S	71.2W					
INVERNESS		1957	MMM	MMM	BBB	BBB
57.5N	4.3W	1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBH	HHH	HHB
		1963	BBB	BBB		
JOHANNESBURG		1957	MMM	MMM	BBB	BBB
26.1S	28.1E	1958	BBH	BBB	BHB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	HHH	HHH	HHH	HHH
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	MMM
		1964	MBM	MMM		
		1967	MMM	MMM		
JULIACA		1959	--B	BB-		
15.5S	70.2W					
JULIUSRUH/RUGEN		1957		MMM	BBM	BBB
54.6N	13.4E	1958	BBB	BHB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	HBB	BBB	BBB	BBB
		1962	BBB	BBB	BHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	MMM	MMM	MM-	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KENORA		1963				BBB
49.8N	94.4W	1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	MBM	MMM
		1966	MMM	MMM	BBM	MB-
KERGUELEN	ISLAND	1957	--M	MMM	BBB	BBB
49.4S	70.2E	1958	BBB	BBB	BBB	BBB
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH		
		1964	MMM	MMM	MM-	
KHABAROVSK		1964	HHH	HHH	HHH	HHH
48.5N	135.2E	1965	HHH	HHH	HHH	HHH
		1966	HH-			
KIRUNA		1957	MMM	MMM	BBB	BBB
67.8N	20.4E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMM	MMM
		1967	MM-	MMM	M--	
KODAIKANAL		1957		--M	-MM	MMM
10.2N	77.5E	1958	MM-	MM-	MMM	-M-
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHB	BBH	HHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBM	MMM
		1965	MMM	MMM	MMM	MMM
		1966	MMM	MMM	MMM	MM-
		1967	-MM	M--		

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
KOKUBUNJI		1957	MMM	MMM	BBB	BBB
35.7N	139.5E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMM	BMM
		1967	BH-	-H-		
KRASNAYA PAKHRA		1957	MMM	MMM	MBB	BBB
55.5N	37.3E	1958	BBB	BHH	BHH	HHB
		1959	BBH	BBH	HBB	M--
		1960	BBB	BBH	HHH	HHH
		1961	HHH	HBB	HHH	HH-
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HH-	-MM
		1964	MMM	MMM	MMM	MMM
		1965	MMM	MMM	MMM	MMM
		1966	MMM	MMM	MMM	M--
LA PAZ		1957				BBB
16.5S	68.1W	1958	BBB	BBB	BBB	BBB
		1960	BBB	HBB	BBB	BBB
		1961	-BB		B--	
		1962				BBB
		1963	BBH	BBB	BB-	
		1964	-BB	BB-	BBB	BBB
		1965	BBB	BBB	BB-	
LA QUIACA		1958		--B	BBB	
22.1S	65.6W					
LEIRVOGUR		1957	MMM	MMM	BBB	BBB
64.2N	21.7W	1958	BBB	BBB	BBB	BHB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBH	BBB	BBB	BBB

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
LEOPOLDVILLE		1957	MMM	MMM	BBM	BBB
4.4S	15.3E	1958	MMM	MMM	MMM	MMM
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBH
		1961	BBB	BBB	BBB	BBB
		1962	BBB	H-H		
		1963	M--			
		1964	MM-	--M	MMM	MMM
		1965	MMM	MMM		
LINDAU/HARZ		1957	MMM	MMM	BBB	BBB
51.7N	10.1E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BMB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	MBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBM	MMM
		1966	--M	MMM	MMM	M--
LITTLE AMERICA		1957			BHH	BBB
78.2S	162.2W	1958	BBB	BBB	BBB	BBB
LONGYEARBYEN		1957			BBB	BBB
78.2N	15.7E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BB-	
LULEA		1957	MMM	MM-	BBB	BBB
65.6N	22.2E	1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBM	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	MMM
		1965	MMM	MMM	M--	
LWIRO		1957	MMM	MM-	BBB	B-B
2.3S	28.8E	1958	BB-	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BB-
		1964	BBB	BB-		
		1965	--M	MMM	MMM	MMM
		1966	MMM	MMM	MMM	

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
LYCKSELE		1957	MMM	MMM	BBB	BBB
64.7N	18.8E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	B-M	MMM
		1967	MMM	MMM	MM-	
MACAU		1958				--M
22.2N	113.6E	1959	BBB	BBB	BBB	BBB
		1960	BBB			
		1961	--B	BB-		
MACQUARIE	ISLAND	1957	M--	MMM	BBB	BBB
54.5S	158.9E	1958	B-H	HBB	BH-	BB-
MADRAS		1957		--B	HBB	BBB
13.0N	80.3E	1958	BBH	BBH	BBB	HBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHB	BBH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	BBH	BBB		
		1966		-MM	M--	
MANILA		1964	BBB	BBB	BBB	BBB
14.6N	125.5E	1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BMM
		1967	MMM	-MM	-M-	
MARION	ISLAND	1957			BBB	BBB
46.9S	37.9E	1958	BBB	-B-		
MAUI		1957	MMM	MMM	BBB	BBB
20.8N	156.7W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	MBB	BBM		
MAWSON		1958	-B-			
67.6S	62.9E	1959		BBB	BBB	BBB
		1960	BB-	--B	BBB	BBB
		1961	BBB	BBB	BBB	BHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	BBB	BBB	BBB	BBB
		1965	BBM	BBM	MB-	BBB
		1966	B--			
MEANOOK		1957			BBB	BB-
54.6N	113.3W	1958	BBB	HHH	HBB	BBB
		1959	B--			
MIEDZESZYN		1958			HHH	-HH
52.2N	21.2E	1959	HHH	H-H	HHH	HHH
		1960	HHH	HBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHH	BBB	BBH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	MMB	MM-		
MIRNY		1957	-HH	HHH	HHH	HHH
66.6S	93.0E	1959	HHH	HHH	HHH	HHH
MUNDARING		1959		BBB	BBB	BBB
31.6S	116.1E	1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BHH	HHH
		1963	BHH	HHH	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	B-M	BBM
MURMANSK		1957	MMM	M--	BHB	BBB
69.0N	33.0E	1958	HHB	BHH	HHB	BHH
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	-HH
		1963	HHH	HHH	HHH	
NAIROBI		1957	-MM	MM-		
1.3S	36.8E					

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
NARSSARSSUAQ		1957	MMM	M--	HBB	BBB
61.2N	45.4W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	-BB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBH
		1967	BBB	BBM		
NATAL		1958	--B	BHB	BHB	BBB
5.3S	35.1W	1959	B--	B-B	BB-	BBB
		1960	BBB	BB-	BBB	BBB
		1961	BBB	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
NORFOLK ISLAND		1964	-BB	B-B	BBB	BBB
29.0S	167.6E	1965	BBB	BBB	BBB	BBB
		1966	MBB	BBB	MBM	BB-
		1967	H--			
NURMIJARVI		1957	MMM	MMM	BBB	BBB
60.5N	24.7E	1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBM	MMM	MMM	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBM
		1967	MMM	-MM	MMM	
OKINAWA		1957	MMM	MMM	BBB	BBB
26.5N	128.0E	1958	BBB	BBB	BBB	BHH
		1959	BBB	BBB	BBB	BBB
		1960	BBH			
		1961	BBB	-BB	BBB	BB-
		1962	-BB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBH	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBB	BMH	B--	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
OSLO (KJELLER)		1957	MMM	MMM	BBB	BBB
59.9N	11.1E	1958	BBH	BBB	BBB	BBB
		1959	B--			
OTTAWA		1957	MMM	MMM	BBB	BBB
45.4N	75.7W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHB	HBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	MBM
		1967	MMM	-MM	MMM	
PARAMARIBO		1957			BBB	BBB
5.8N	55.2W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	-BB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBH	BBB	BBB	H-H
		1962	HHH	HH-		
		1964	BBB	BBB	BBB	BBB
		1965	--B	-BB	BMM	
POITIERS		1957	MMM	MMM	BBB	BBB
46.6N	0.3E	1958	BBB	BMM	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1964	M--			
PORT LOCKROY		1957	MM-	MMM	BBB	BBB
64.8S	63.5W	1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBH	HHH	HHH	HHH
PORT MORESBY		1961		-BB	BHB	BBB
9.2S	147.1E	1962	BBB	BBB	BBH	HHH
		1963	BBB	HHH	HHB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	MBM	BBB	BBB	BBM
		1967	MM-			

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
PORT STANLEY		1957	MMM	MMM	BBB	BBB
51.7S	57.9W	1958	BBB	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHH	HBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	B--		
PROVIDENIYA BAY		1957	--M	MM-		
64.4N	173.4W	1959		--M		
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HH-		
PRUHONICE		1958		-MM		-MM
49.9N	14.6E	1959	HBB	BBB	BBB	BHB
		1960	BBB	BBB	BHH	HBB
		1961	HHH	BBB	BBB	BBB
		1962	HHB	BBB	BBB	BHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	MMM	MMM	MMM	M--
PUERTO RICO		1957	MMM	MMM	BBB	BBB
18.5N	67.2W	1958	BBB	BBB	BBB	BBB
QUETTA		1957				MMM
30.2N	66.9E	1958	MMM	MM-		MMM
		1959	MM-			
		1960			MMM	M--
		1961				M--
		1962		--M	M--	
RABAT		1958	-BB	BMM	BBB	BBB
34.0N	6.8W	1959	BBB			-BB
		1960	BBB	HHH	HHH	HHH
RAOUL ISLAND		1964	-HH	HHH	HHH	HHH
29.3S	177.9W	1965	HHH	HHH	HH-	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
RAROTONGA		1957	MMM	MMB	BBB	BBB
21.2S	159.8W	1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBH	HHH	HHH	HHH
		1961	HHH	HHB	BBB	BBB
		1962	HHH	HHH	HHH	BHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBM	M-M
		1967	MMM			
RESOLUTE BAY		1957	MMM	MMM	BBB	BBB
74.7N	94.9W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHB	HBB	BBB
		1963	BBB	BBH	HHB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	MBM
		1967	MMM	-MM	MMM	
ROI BAUDOUIN		1958		HHH	HHH	HHH
70.4S	24.3E	1959	H--			
ROME		1957				--B
41.9N	12.5E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBH	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBM	M-M
		1967	MMM	MMM		
ROSTOV-ON-DON		1957	M-M	MM-	M--	
47.2N	39.7E	1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HH-
SACLAY		1960		--B	BBB	BBB
48.7N	2.2E	1961	BBB	BBB	BBB	HHH
		1962	HHH	HHH		--H
		1963	BBB	BHH	HHH	
		1964	MMM	MMM	MMM	-MM
		1965	MMM	MMM	MMM	M--

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ST. JOHN'S		1957	-MM	MMM	BBB	BBB
47.5N	52.8W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHB	HBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	MMM	-MM	MMM	
SALEKHARD		1957			M--	
66.6N	66.7E	1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	--H
		1963	HHH	H--		
SALISBURY		1962				HHH
34.5S	138.4E	1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMB	BM-
SALISBURY, RHOD.		1958	HBH	BBB	BBB	BBH
17.8S	31.0E					
SANAE BASE		1962		--H	HHH	HHH
70.3S	2.4W	1963	HHH	H--	HHH	
		1964	MMM	MMM	MMM	MMM
		1965	M-M	-MM	HHH	
		1966	-HH	HH-	HHH	H--
		1967	HH-			
SAN FRANCISCO		1957	MMM	MMM	BBB	BBB
37.4N	122.2W	1958	BBB	BBB	BBB	BBB
		1959	B--			
SAN SALVADOR		1958				-BB
24.1N	74.5W	1959	B--			
SAO PAULO		1957	MMM	MMM	BBB	BBB
23.6S	46.6W	1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBH	-HH
		1962	HHH	HHH	HHH	HHH
		1963	HH-			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SCHWARZENBURG		1957	MMM	MMM	BBB	BBB
46.8N	7.3E	1958	BBB	BBB	BBB	BBB
		1959	BBB		BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBH	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	B-B	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBM	MMM	MMM	--M
		1967	M--			
SCOTT BASE		1957	--M	MMM	BBB	BBB
77.9S	166.8E	1958	BBH	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	MMM			
SIMFEROPOL		1957	M-M	M-M		
44.7N	34.0E	1959		-MM	M--	
SINGAPORE		1957	MMM	MMM	BBB	BBB
1.3N	103.9E	1958	BBB	BBB	BHH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	HHH	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBM	MM-		
SLOUGH		1957	MMM	MMM	BBB	BBB
51.5N	0.6W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHH	HHH	HBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBM		

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
SODANKYLA		1957			-BB	BBB
67.4N	26.7E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BMB
		1967	MM-	-MM	MMM	
SOYA		1957	-M-			
68.5S	37.0E	1958				-HH
		1959	H--			-HH
		1960	HHH	H--		-HH
		1961	HHH	HH-		-HH
		1962	HHH	H--		
SVERDLOVSK		1957	M-M	MMM	BBH	HHH
56.7N	61.1E	1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH			
SYOWA BASE		1959	-BB	BBB	BBB	BBB
69.0S	39.6E	1960	BHH	HHH	H--	
TAHITI		1957				--B
17.5S	149.5W	1958	BBB	BMM	BBB	BBB
		1959	BBB	BBB	BBB	BB-
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	-HH
		1962	HHH	HHH		--H
		1963	BBB	BHH	-HH	
		1964	MMM	MM-	MMM	MMM
TAIPEI		1957	MMM	MMM	BBB	BBB
25.0N	121.5E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BHB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	HBB	BBH
		1966	HHH	HHH	HH-	--M
		1967	MMM	MMM	M--	

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TALARA		1957	MMM	MMM	BBB	BBB
4.6S	81.3W	1958	BBB	BBB	BBH	BBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
TAMANRASSET		1957	MMM	M--	BBB	-B-
22.8N	5.5E	1958	-BB	BMM	BBB	BB-
		1959	BBB	BBB	BBB	B--
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH			HHH
		1963	HH-			
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	MM-			
TANANARIVE		1957	MMM	MMM	BBB	BBB
18.9S	47.5E	1958	BBB	BMM	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	HHH
		1962	HHH	HHH		--H
		1963	BBB	BHH	HHH	HHH
		1964	BBB	BBB	BBB	BBB
		1965	MM-	MMM		
TEHRAN		1963		BBH	HHB	BBB
35.7N	51.4E	1964		BBB		BBB
		1965	BBB	BBB	BBB	BBB
		1966	BHB	BBB	MMM	-MM
TERRE ADELIE		1957	M-M	MMM	BBB	BBB
66.7S	140.0E	1958	BBB	BBB	BBB	BBB
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962			HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	BB-			

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
THULE		1957	MMM	MMM	BBB	BBB
76.5N	68.8W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	B-B	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BB-	BBB
		1965	BB-	BBB	BBB	BBB
		1966	BBB	BBB	H--	
THUMBA		1964				MMM
8.6N	76.9E	1965	MMM	BB-	BBB	BBB
		1966	BBB	MB-	BBB	BBB
		1967	BB-	-HH	H--	
TIKSI BAY		1957			HHH	
71.6N	129.0E	1958		HH-	HHH	HHH
		1959	-HH	HHH	HHH	HHH
TIRUCHIRAPALLI		1957		--B	HBB	BBB
10.8N	78.8E	1958	BBH	BBH	BBB	HBH
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHB	BBH	HHH	HHH
		1963	HHH	HHH	HHH	BBB
		1964	BBH	BBB	BBM	MMM
		1966	MMM	MMM	M--	
TOMSK		1957	M-M	M-M	BHH	HHH
56.5N	84.9E	1958	HHH	HHH	HHH	HH-
		1959	-HH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
TOWNSVILLE		1957	MMM	MMM	BBB	BBB
19.3S	146.7E	1958	BB-	BBB	BBB	BBB
		1959	B--	HBB	BBB	BBB
		1960	BBB	BBH	BBB	BBH
		1961	BBB	BBB	BBB	B--
		1962	--B	BBB	BBB	HHH
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBH
		1966	MBH	HHB	BBB	MBH
		1967	BM-			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
TRELEW		1958		BBB	BBB	BBB
43.2S	65.3W	1959	BBB	BBB	BBB	M-B
		1960	BBB	-BB	BB-	--B
		1961	BBB	BBB	BBB	BBB
		1962	HHH	HHH	HHH	HHH
		1964		MMM		
TRIVANDRUM		1957		--M	-MM	MMM
8.5N	76.9E	1958	MM-	MM-	MMM	-M-
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHB	BBH	HHH	HHH
		1963	HHH	HHH	HBB	BBB
		1964	BBB	BBB	BBM	
TROMSO		1957	MMM	MMM	BBB	BBB
69.7N	18.9E	1958	BBH	BBB	BBH	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	B--	--B	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	HBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	MM-	-MM	MMM	MMM
		1967	MMM	MMM		
TSUMEB		1957			BBB	BBB
19.2S	17.7E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1964		--B	BMM	MMM
		1965	MMM	MMM	MM-	
TUCUMAN		1957			BBB	BBB
26.9S	65.4W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	HHH	HHH	--H
		1961	HHH	BBB	HHH	
		1962			--H	HHH
		1963	HBB	HHH	HHH	HHH
		1964	B--	BBB	BBB	BB-
		1965		-BB	BBB	

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
UPPSALA		1957	MMM	MMM	MMM	BBM
59.8N	17.6E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BHB	MMM
		1967	MMM	MMM	MM-	
USHUAIA		1957				-B-
54.8S	68.3W	1958	HBB		B-B	BBB
		1959	BBH			
		1961		-H-	--H	HH-
		1966	MMM			
VANIMO		1964			BBB	BBB
2.7S	141.3E	1965	BBB	BBB	BBB	BBB
VICTORIA		1957			BBB	BBB
48.5N	123.4W	1958	HBB	BBH	HBB	BBB
		1959	B--			
VOSTOK		1958	--H	HHH	HHH	HHH
78.5S	106.9E	1959	HHH	HHH	HHH	HHH
VOYEIKOVO		1957	M-M	MMM	HHH	HHH
59.9N	30.7E	1958	HHH	HH-	-HH	
		1959		HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
		1966	HHH			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
WAKKANAI		1957	MMM	MMM	BBB	BBB
45.4N	141.7E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMM	BMM
		1967	BBM	MB-		
WATHEROO		1957	MMM	MMM	BBB	BBB
30.3S	115.9E	1958	BB-	BBB	BB-	BBB
		1959	BBB			
WHITE SANDS		1957	MMM	MMM	BBB	BHB
32.4N	106.9W	1958	BBB	BBB	BBB	BHB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	B--	--B
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BBB	BBB
		1967	BBH	BMM		
WILKES		1957			BBB	BBB
66.3S	110.5E	1958	BB-	-BB	BBB	-BB
		1959	BHB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	HBB	BBB	BBH	BHH
		1962	HHH	HHH	HHH	HHH
		1963	H--			HHH
		1964	BBB	BBB	BBB	BBB
		1965	BB-	-B-	-BB	BBB

H = Hourly Values M = Median Values B = Both Values

VERTICAL INCIDENCE SOUNDINGS (Continued)

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
WINNIPEG		1957	MMM	MMM	BBB	BBB
49.9N	97.2W	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BHB	HBB	BBB
		1963	BBB	BBB	BBB	
		1965			HHH	HHH
		1966	HHH	HHH	HHH	--M
		1967	MM-	-MM	MMM	
WOOMERA		1961				--B
30.7S	136.8E	1962	BHH	HHH	HHH	HHH
		1963	BBB	HHH	HBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BMM	BMB	B--	
YAKUTSK		1957	-MM	MMM	HHH	HHH
62.0N	129.7E	1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HHH	
		1960	HHH	HHH	H--	
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HH-	-HH	HHH
		1963	HHH	HHH	H--	
YAMAGAWA		1957	MMM	MMM	BBB	BBB
31.2N	130.6E	1958	BBB	BBB	BBB	BBB
		1959	BBB	BBB	BBB	BBB
		1960	BBB	BBB	BBB	BBB
		1961	BBB	BBB	BBB	BBB
		1962	BBB	BBB	BBB	BBB
		1963	BBB	BBB	BBB	BBB
		1964	BBB	BBB	BBB	BBB
		1965	BBB	BBB	BBB	BBB
		1966	BBB	BBB	BMM	BMM
		1967	BBM	MB-		

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
YELLOWKNIFE		1957				-BB
62.4N	114.4W	1958	HHB	HHH	BBB	BBB
		1959	BH-			
YUZHNO		1957	--M	MM-	HHH	HHH
46.9N	142.7E	1958	HHH	HHH	HHH	HHH
		1959	HHH	HHH	HHH	HHH
		1960	H-H	HH-		
ZUI (IRKUTSK)		1957	M-M	MM-	HHH	
52.5N	104.0E	1958	--H	--H	HHH	-HH
		1959	HHH	HHH	HHH	HHH
		1960	HHH	HHH	HHH	HHH
		1961	HHH	HHH	HHH	HHH
		1962	HHH	HHH	HHH	HHH
		1963	HHH	HHH	HHH	HHH
		1964	HHH	HHH	HHH	HHH
		1965	HHH	HHH	HHH	HHH
		1966	HH-			

H = Hourly Values M = Median Values B = Both Values

BOTTOMSIDE IONOGRAMS

Bottomside ionograms are available from the Wallops Island station beginning on February 3, 1965. The data are recorded at 15-min intervals and are available on 35-mm film. The films are received weekly directly from the station. Bottomside ionograms from additional stations may be acquired upon request.

IONOSPHERIC MAPS

The following ionospheric maps are available for the Antarctic:

1. foE (MHz) and foF1 (MHz) – December 1957

2. foF2 (MHz) – July and December 1957 and March 1958

3. Percentage of time during which foEs > 5 MHz – July and December 1957 and March 1958

4. Magnetic B values for the Antarctic

5. Magnetic L values for the Antarctic

ELECTRON DENSITY DATA

The ionospheric electron density data are presented in tabular form as a function of true height and time (hourly values). The maximum electron densities as obtained from foF2 are presented.

In addition, mean electron density profiles are presented as a function of true height for each hour.

The available electron density data are listed in the following table.

ELECTRON DENSITY

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
ADAK		1959			XXX	XXX
51.9N	176.5W	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XX-	XXX
		1962	X--			
BAGUIO		1960	-XX	XXX	XXX	XXX
16.4N	120.6E	1961	XXX	XXX	XXX	XXX
		1962	XX-			
BOGOTA		1960	X-X			
4.5N	74.1W					
BOULDER		1961	-XX	XXX	XXX	-X-
40.0N	105.3W	1962	XXX			
CANAL ZONE		1957			XXX	XXX
9.4N	79.9W	1958	XXX	XXX	XXX	XXX
FORT BELVOIR		1957			XXX	XXX
38.7N	77.1W	1958	XXX	XXX	XXX	XXX
FORT MONMOUTH		1959	-XX	XXX	XXX	XXX
40.3N	74.0W	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	--X	XXX
		1962	XXX	XXX		XXX
		1963	XXX	XXX	XXX	XXX
GODHAVN		1961				-XX
69.3N	53.3W	1962	XXX	XXX		-XX
		1963	XXX	X--		
GRAND BAHAMA IS.		1959	XXX	XXX	XXX	XXX
26.7N	78.4W	1960	XXX	XXX	XXX	XXX
		1961	--X	X--		XXX
		1962	XX-			

STATION LAT	LONG.	YEAR	JFM	AMJ	JAS	OND
HUANCAYO		1957			XXX	XXX
12.1S	75.3W	1958	XXX	XXX	XXX	XXX
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX			
OKINAWA		1959		--X	XXX	XXX
26.5N	128.0E	1960	XXX			
		1962	--X	-X-		
PUERTO RICO		1959	XXX	XXX	XXX	XXX
18.5N	67.2W	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX			
ST. JOHN'S		1959	--X	XXX	XXX	XXX
47.5N	52.8W	1960	XXX	XXX	XXX	XXX
		1961	XXX	X--		
TALARA		1957			XXX	XXX
4.6S	81.3W	1958	XXX	XXX	XXX	XXX
		1959		X--		
		1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	XXX	X--		
THULE		1960		XXX	X-X	XXX
76.5N	68.8W	1961	XXX	XXX	XXX	XXX
		1962	XXX	XXX	X--	
WALLOPS ISLAND		1963			-XX	XXX
37.9N	75.5W	1964	XXX	XXX	XXX	XXX
		1965	XXX	XXX	XXX	XXX
		1966	XXX	XXX	XXX	XXX
		1967	XXX			
WHITE SANDS		1959	--X	XXX	XXX	XXX
32.4N	106.9W	1960	XXX	XXX	XXX	XXX
		1961	XXX	XXX	XXX	XXX
		1962	X--			

IONOSPHERIC EFFECTS OF SOLAR FLARES

Ionospheric effects related to solar flares include:

SID = Sudden ionospheric disturbances
SCNA = Sudden increases in cosmic noise absorption
SEA = Sudden enhancement of low-frequency atmospherics
SPA = Sudden phase anomalies at VLF
SES = Sudden enhancements at VLF
SFD = Sudden frequency deviations
SWF = Shortwave fadeout

These tabulations include:

1. Date
2. Beginning, ending, and maximum phase (UT)
3. Type and importance rating if SWF
4. Percent absorption and importance if SCNA
5. Importance if SEA
6. Degrees of phase change if SPA with path designated
7. Importance if SES
8. Frequency deviation if SFD, and frequencies on which observed
9. Importance of solar noise burst observed at 18 MHz
10. Geographically widespread index for type of event
11. Station observing event
12. Associated solar flare, if known

Data are available on printed pages for the period of Jan. 1957 through July 1967. Data for the period of Mar. 1958 through Dec. 1964 are also available on magnetic tape.

RIOMETER DATA

Cosmic noise absorption data are collected by riometer stations and are available in both tabular and graphical formats.

The difference in db between the recorded values and those of a quiet day curve indicates the magnitude of the ionospheric absorption. This difference is the quantity that is tabulated.

A list of riometer stations and their coordinates is followed by a list of available riometer data recordings.

STATION LIST

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES		GEOMAGNETIC COORDINATES	
		LAT	LONG.	LAT	LONG.
ANTARCTICA					
AMUNDSEN-SCOTT	USA	90.0S	0.0E	78.5S	0.0E
BYRD STATION	USA	79.9S	120.0W	70.6S	336.0E
CAPE HALLETT	NEW ZEALAND/USA	72.3S	170.2E	74.7S	278.2E
EIGHTS STATION	USA	75.2S	77.2W	64.0S	358.0E
BRAZIL					
SAO JOSE DOS CAMPOS	BRAZIL/USA	23.2S	45.9W	12.4S	21.6E
CANADA					
BAIE ST. PAUL	CANADA/USA	47.4N	70.5W		
CAPE JONES	CANADA	54.5N	79.5W	65.8N	146.0E
CHURCHILL	CANADA	58.8N	94.1W	68.8N	322.5E
FROBISHER BAY	CANADA/USA	63.5N	67.4W	75.3N	1.0E
GREAT WHALE	CANADA/USA	55.3N	77.8W	66.8N	347.2E
MOOSONEE	CANADA	51.5N	80.7W		
GREENLAND					
THULE	DENMARK/USA	76.5N	68.8W	88.1N	1.1E
INDIA					
AHMADABAD	INDIA	23.0N	72.6E	13.9N	143.9E
NEW DELHI	INDIA/USA	28.6N	77.2E	18.9N	148.9E
PERU					
HUANCAYO	PERU/USA	12.1S	75.3W	0.6S	353.8E
PHILIPPINES					
MANILA	PHILIPPINES/USA	14.6N	125.5E	3.5N	190.9E
REPUBLIC OF SOUTH AFRICA					
HERMANUS	REPUBLIC OF SOUTH AFRICA/USA	34.4S	19.2E	33.3S	80.5E
SWEDEN					
KIRUNA	SWEDEN	67.8N	20.4E	65.3N	115.9E
UNITED STATES OF AMERICA					
BARROW, ALASKA	USA	71.3N	156.8W	68.6N	241.0E
BEDFORD, MASSACHUSETTS	USA	42.5N	71.3W	54.0N	357.0E
COLLEGE, ALASKA	USA	64.9N	147.8W	64.7N	256.5E
FAREWELL, ALASKA	USA	62.5N	154.0W	61.4N	253.4E
FORT YUKON, ALASKA	USA	66.6N	145.3W	66.7N	256.8E
KING SALMON, ALASKA	USA	58.7N	156.7W	57.5N	254.9E
MAUI, HAWAII	USA	20.8N	156.7W	20.8N	268.1E
NUFF CREEK, CALIFORNIA	USA	37.5N	122.4W	43.6N	298.5E
UNALASKA ISLAND, ALASKA	USA	53.9N	166.5W	50.9N	247.9E

RIOMETER DATA RECORDINGS

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
AHMADABAD	1964		XXX	XXX	XXX
23.0N 72.6E	1965	XXX	XXX	XXX	XXX
21 MHZ					
AMUNDSEN-SCOTT	1963	XXX	XXX	XXX	XXX
90.0S 0.0E	1964	XXX	XXX	XXX	XXX
26 MHZ					
AMUNDSEN-SCOTT	1967	--X	X--		
90.0S 0.0E					
30 MHZ					
BAIE ST. PAUL	1963		-XX	XXX	XXX
47.4N 70.5W	1964	XXX	XXX	XXX	XXX
30 MHZ					
BARROW	1958	--X	XXX	XXX	XXX
71.3N 156.8W					
28 MHZ					
BEDFORD	1964		XXX	XXX	XXX
42.5N 71.3W	1965	XXX	XXX		
22 MHZ	1966	--X			
BEDFORD	1964		XXX	XXX	XXX
42.5N 71.3W	1965	XXX	XXX		
30 MHZ	1966	XXX	XXX	XXX	XXX
BEDFORD	1964		-XX	XXX	XXX
42.5N 71.3W	1965	XXX	XXX		
63 MHZ	1966	--X			
BYRD STATION	1963	XXX	XXX	XXX	XXX
79.9S 120.0W	1964	XXX	XXX	XXX	XXX
30 MHZ					
CAPE HALLETT	1962				XXX
72.3S 170.2E	1963	X--			
30 MHZ					
CAPE JONES	1963	--X	XXX	XXX	XXX
54.5N 79.5W	1964	XXX	XXX	XXX	XXX
30 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
CHURCHILL	1964			--X	
58.8N 94.1W					
30 MHZ					
COLLEGE	1957			XXX	XXX
64.9N 147.8W	1958	XXX	XXX	XXX	XXX
28 MHZ	1959			XXX	XXX
	1960	XXX	XXX	XXX	XXX
	1961	XXX	XXX	XXX	XXX
	1962	XXX	XXX	XXX	XXX
	1963	XXX	XXX		
COLLEGE	1963			--X	XXX
64.9N 147.8W	1964	XXX	XXX	XXX	XXX
30 MHZ	1965	XXX	XXX	XXX	XXX
	1966	XXX	XXX	XXX	XXX
EIGHTS STATION	1963		-XX	XXX	XXX
75.2S 77.2W	1964	XXX	XXX	X--	
30 MHZ					
FAREWELL	1957				-XX
62.5N 154.0W	1958	XXX	XXX	XXX	XXX
28 MHZ					
FORT YUKON	1958	-XX	X--	--X	X--
66.6N 145.3W					
28 MHZ					
FROBISHER BAY	1963		XXX	XXX	XXX
63.5N 67.4W	1964	XXX	XXX	XXX	XXX
30 MHZ	1965	XXX	XX-		
GREAT WHALE	1963	-XX	XXX	XXX	XXX
55.3N 77.8W	1964	XX-	-XX	XXX	-XX
30 MHZ	1965		--X	XXX	XXX
	1966	XXX	XXX	XXX	XXX
	1967	X--			
HERMANUS	1964				XXX
34.4S 19.2E	1965	XXX	XXX		
30 MHZ	1966	X-X			

RIOMETER DATA RECORDINGS (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
HUANCAYO	1964	XXX	XXX	XXX	
12.1S 75.3W	1966	--X			
30 MHZ					
KING SALMON	1957			--X	XXX
58.7N 156.7W	1958	XXX	XXX	XXX	XXX
28 MHZ					
KIRUNA	1959	XXX	XXX	XXX	XXX
67.8N 20.4E	1961	XXX	XXX	XXX	XXX
28 MHZ	1962	XXX	XXX	XXX	XXX
	1963	XXX	XXX	XXX	XXX
	1964	XXX	XXX	XXX	XXX
	1965	XXX	XXX	XXX	XXX
MANILA	1964	XXX	XXX		
14.6N 125.5E	1966	-XX			
30 MHZ					
MAUI	1964	XXX	XXX	XXX	XXX
20.8N 156.7W					
30 MHZ					
MOOSONEE	1964			--X	
51.5N 80.7W					
30 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
NEW DELHI	1964	XXX			
28.6N 77.2E					
20 MHZ					
NEW DELHI	1964	XXX			
28.6N 77.2E					
30 MHZ					
NUFF CREEK	1963		--X	XXX	XXX
37.5N 122.4W					
30 MHZ					
SAO JOSE	1963	--X	XXX	XXX	XXX
23.2S 45.9W	1964	XXX	XXX	XXX	XXX
30 MHZ	1965.	XXX	XXX	XXX	XXX
	1966	XXX	XXX	XXX	X--
THULE	1958		-XX	XXX	XXX
76.5N 68.8W					
28 MHZ					
THULE	1962				XXX
76.5N 68.8W	1963	X--			
30 MHZ	1964	XXX	XXX	XXX	XXX
	1965	XXX	XXX		
	1966	--X			
UNALASKA ISLAND	1957				XXX
53.9N 166.5W	1958	XXX	XXX	XXX	XXX
28 MHZ					

PART VI
PLANETARY RADIO EMISSIONS

DATA DESCRIPTION

One of the most pronounced radio emissions of extraterrestrial origin is that received from the planet Jupiter. Both fixed- and sweep-frequency observations are made synoptically by ground observatories.

Solar radio emission data are included in this Catalog under the Solar Physics discipline (Part VIII).

JUPITER RADIO EMISSION DATA

FLORIDA STATE UNIVERSITY DATA

Observations of Jupiter's radio emission at fixed frequencies have been made by Florida State University and cooperative stations in remote areas. These data, observed near transit, are available for the 1961-1964 period. The Data Center has the analyzed data in tabular form and oscillograph tracings on 35-mm microfilm. The observing periods are:

Period	Observing Frequency (MHz)	Station
04-06-61 to 08-12-61	18.3	Tallahassee, Fla.
	18.7	Tallahassee, Fla.
	19.5	Tallahassee, Fla.
	24.0	Tallahassee, Fla.
04-25-62 to 08-27-62	19.0	Tallahassee, Fla.
	16.0	Tallahassee, Fla.
	22.0	Tallahassee, Fla.
	26.0	Tallahassee, Fla.
	38.0	Tallahassee, Fla.

FLORIDA STATE UNIVERSITY DATA (Continued)

Period	Observing Frequency (MHz)	Station
07-13-63 to 11-25-63	18.0	Tallahassee, Fla.
	16.0	Tallahassee, Fla.
	22.0	Tallahassee, Fla.
	26.0	Tallahassee, Fla.
07-17-63 to 11-25-63	18.0	St. Osyth, England
	18.0	Grahamstown, S. Africa
07-27-64 to 12-31-64	18.0	Tallahassee, Fla.
07-27-64 to 01-14-65	16.0	Tallahassee, Fla.
	22.0	Tallahassee, Fla.
	26.0	Tallahassee, Fla.
08-01-64 to 12-15-64	18.0	Combined Data
	18.0	St. Osyth, England
	18.0	Grahamstown, S. Africa
	18.0	Valencia, Spain
	18.0	Ibadan, Nigeria
	18.0	Trondheim, Norway

The data include:

1. Day, month, and year of observation
2. Station observing
3. Observing period (UT)
4. Frequency observed
5. Activity periods
6. Identification (uncertain, probable, certain)
7. Jupiter longitudes

GODDARD SPACE FLIGHT CENTER DATA

Continuous observations of sporadic radio emission from Jupiter have been made at the Goddard site during the 1965 apparition of Jupiter. All measurements were made by a pair of two-element, lobe-sweeping interferometers operating at 16.7 and 22.2 MHz. The antennas were set to the declination of Jupiter and held fixed on the local meridian. Hence, the analysis was confined

to periods between 3 hr before transit and 3 hr after transit – the approximate half-power beam width of the Yagi antennas.

Data were reduced in the following manner: Each 6-hr period centered on local meridian transit of Jupiter was divided into 5-min intervals. Each interval was inspected for occurrence of interference and, if interference-free, for evidence of Jupiter activity. Those noise events that could be classified as definite or probable Jupiter activity were scaled to give the average peak antenna temperatures for each 5-min interval. The Data Center has the analyzed data in tabular form for the period of Nov. 11, 1965, through Feb. 28, 1966. The data include:

1. Day, month, and year of observation
2. Observing period
3. Frequency observed
4. Activity periods
5. Identification (possible, probable, definite)
6. Average peak antenna temperatures for each 5-min interval
7. Notes

HIGH ALTITUDE OBSERVATORY (HAO) DATA

Observations of Jupiter's radio emission in the range of 7.6-41 MHz have been made by the HAO with a sweep-frequency interferometer. The Data Center has the analyzed data in tabular form and oscillograph tracings on 35-mm film for the period of Jan. 1960 to July 1966. The data include:

1. Day, month, and year of observation
2. Observing period (UT)
3. Jupiter observations
4. Intensity
5. Bursts (smooth, strong, weak, moderate)
6. Frequency range (MHz)
7. Jupiter longitudes

UNIVERSITY OF FLORIDA DATA

Observations of Jupiter's radio emission at fixed frequencies have been made by the University of Florida and a cooperative station in Santiago, Chile. These data, observed near transit, are available for the 1957-1962 period. The Data Center has the analyzed data in tabular form and oscillograph tracings on 35-mm microfilm. The observing periods are:

University of Florida Data (Continued)

Period	Observing Frequency (MHz)	Station
01-01-57 to 03-06-57	18.0	Gainesville, Florida
12-02-57 to 03-31-58	18.0 22.2	Gainesville, Florida Gainesville, Florida
01-16-58 to 03-31-58	27.6	Gainesville, Florida
01-01-59 to 04-23-59	18.0	Gainesville, Florida
01-24-59 to 04-23-59	22.2	Gainesville, Florida
02-04-59 to 04-23-59	27.6	Gainesville, Florida
12-26-59 to 05-21-60	18.0 27.6	Gainesville, Florida Gainesville, Florida
02-11-60 to 05-21-60	22.2	Gainesville, Florida
02-19-60 to 03-21-60	27.6	Santiago, Chile
02-19-60 to 08-06-60	18.0	Santiago, Chile
03-22-60 to 08-06-60	16.7	Santiago, Chile
05-17-60 to 08-06-60	20.0	Santiago, Chile
05-31-60 to 08-06-60	10.0	Santiago, Chile
02-01-61 to 01-31-62	27.6	Gainesville, Florida
02-01-61 to 02-01-62	18.0	Gainesville, Florida
02-10-61 to 11-19-61	18.0	Santiago, Chile
03-04-61 to 09-13-61	10.0	Santiago, Chile
03-07-61 to 11-20-61	20.0	Santiago, Chile
03-27-61 to 07-28-61	22.2	Santiago, Chile
04-19-61 to 08-07-61	5.0	Santiago, Chile
06-08-61 to 10-25-61	31.0	Santiago, Chile
07-16-61 to 11-01-61	15.0	Santiago, Chile
08-18-61 to 11-20-61	27.6	Santiago, Chile

University of Florida Data (Continued)

Period	Observing Frequency (MHz)	Station
10-26-61 to 01-10-62	15.0	Gainesville, Florida
03-20-62 to 02-26-63	18.0	Gainesville, Florida
03-20-62 to 03-06-63	27.6	Gainesville, Florida
04-01-62 to 11-27-62	15.0	Santiago, Chile
04-01-62 to 12-21-62	18.0	Santiago, Chile
05-20-62 to 07-17-62	22.2	Santiago, Chile
06-08-62 to 12-18-62	22.2	Gainesville, Florida
06-10-62 to 11-27-62	5.0	Santiago, Chile
06-17-62 to 01-20-63	15.0	Gainesville, Florida
07-19-62 to 11-28-62	10.0	Santiago, Chile
07-25-62 to 11-01-62	15.8	Santiago, Chile
08-01-62 to 03-06-63	22.2	Gainesville, Florida
08-21-62 to 11-27-62	27.6	Santiago, Chile

Also available on 35-mm microfilm are high-speed brush records from Gainesville, Florida, for Dec. 13, 1956, to June 1, 1963, and from Santiago, Chile, for Feb. 26, 1960, to Dec. 17, 1962. The data include:

1. Day, month and year of observation
2. Station observing
3. Observing period (UT)
4. Frequency observed
5. Activity periods

PART VII

SOLAR PHYSICS

DATA DESCRIPTION

Solar data available at present through the facilities of the Data Center include relative sunspot numbers, sunspot magnetic field data, calcium plages, coronal line emission indices, flare reports, radio emissions, and solar activity summaries. Data on the ionospheric effects of solar flares are included in Part V of this Catalog. The major contributors of these data are:

Catania Astrophysical Observatory, Italy
High Altitude Observatory, Colorado
Kislovodsk Observatory, USSR
McMath-Hulbert Observatory, Michigan
Mount Wilson Observatory, California
Pic-du-Midi Observatory, France
Rome Astronomical Observatory, Italy
Sacramento Peak Observatory, New Mexico
United States Naval Observatory, Washington, D. C.

SUNSPOT DATA

RELATIVE SUNSPOT NUMBERS

Data include the daily American relative sunspot numbers, R_A', and the provisional daily Zurich relative sunspot numbers, R_Z.

The relative sunspot number is an index of the activity of the entire visible solar disk and is determined each day without reference to preceding days. Each isolated cluster of sunspots is termed a sunspot group, and it may consist of one or a large number of distinct spots whose size can range from 10 or more square degrees of the solar surface down to the limit of resolution. The relative sunspot number is defined as $R = K(10g + s)$, where g is the number of sunspot groups and s is the total number of distinct spots. The constant K (usually less than unity) is a calibration scale factor for the observing instrument and is intended to effect the conversion to the scale originated by R. Wolf in 1849. The counts are made visually with small, suitably protected telescopes.

Final values of R_z appear in the IAU Quarterly Bulletin on Solar Activity, the Journal of Geophysical Research, and Solar-Geophysical Data (a monthly publication of ESSA/ITSA). They usually differ slightly from the provisional values, whereas the American numbers, R_A', are not revised.

Data are available in tabular form for the period of Jan. 1957 through Oct. 1967, and were obtained from Solar-Geophysical Data.

FRAUNHOFER INSTITUT MAPS OF THE SUN

Daily maps of the sun have been received from the Fraunhofer Institut, Freiburg im Breisgau, German Federal Republic. Data include:

1. Sunspots
2. Plages
3. Filaments, prominences, and their sudden disappearances
4. Corona
5. Flares

Data are available for Jan. 1957 through June 1961 and Jan. 1962 through Oct. 1967.

POSITIONS, CLASSIFICATIONS, AND AREAS

Daily total areas of sunspot groups as well as heliographic position, classification, and area of sunspot groups have been received in tabular form from Catania Astrophysical Observatory, Catania, Italy; Rome Astronomical Observatory, Rome, Italy; and U. S. Naval Observatory, Washington, D.C.

Available data are as listed.

Station	Data Available
Catania Astrophysical Observatory	Jan. 1958 - Dec. 1959
Rome Astronomical Observatory	Jan. 1959 - Feb. 1962;
	Apr. 1962 - Aug. 1966
	Oct. 1966 - July 1967
U.S. Naval Observatory	Jan. 1948 - Dec. 1961,
	Jan. 1964 - May 1965

GRAPHS OF SUNSPOT CYCLE

These graphs illustrate the recent trend of Cycles 19 and 20 of the 11-yr sunspot cycle and some predictions for the future level of activity. The customary 12-mo smoothed index, R, is used throughout the graphs. The data shown on the graphs are final R_z numbers through Dec. of the preceding calendar year. Predictions shown are those made for 1 yr after the latest available data.

Data are available for the period of Jan. 1957 through Oct. 1967. The source for these data is Solar-Geophysical Data.

SOLAR MAGNETOGRAMS (MOUNT WILSON)

Observations of strong solar magnetic fields are made with a magnetograph at the 150-foot tower telescope on Mount Wilson. The instrument measures the magnetic field flux by monitoring the line λ 5250.216 Fe I. The scanning system is always oriented so that the scan lines are perpendicular to the central meridian of the sun.

The magnetograms are computer-plotter isogauss drawings. Contour lines connect points representing various gauss levels. The polarities of the flux are indicated by solid lines for positive values and dotted lines for negative values. The resulting magnetogram is made up of a number of well-defined areas showing the locations of the magnetic fields.

These data, which also appear in Solar-Geophysical Data are available for the period of Sept. 1966 through Sept. 1967.

MAGNETIC FIELD DATA (MOUNT WILSON)

Data include the date and time of observation, the approximate heliocentric coordinates, and the magnetic classification of the sunspot group.

The classifications are defined as follows:

λp = A group in which all the magnetic measures are of the same polarity, which is that corresponding to the preceding spots in that hemisphere for that cycle

λf = A group in which all the magnetic measures are of the same polarity, which is that corresponding to the following spots in that hemisphere for that cycle

βp = A bipolar group in which the magnetic measures indicate that the preceding spots are dominant

βf = A bipolar group in which the magnetic measures indicate that the following spots are dominant

β = A bipolar group in which the magnetic measures indicate a balance between the preceding and following spots

$\beta\lambda$ = A group that has general characteristics but in which one or more spots are out of place as far as the polarities are concerned

λ = A group in which the polarities are completely mixed

Data are available for the period of Jan. 1962 through Oct. 1967.

CALCIUM PLAGE DATA

Daily calcium plage data have been received from the McMath-Hulbert Observatory, University of Michigan. These data are available for the period of Jan. 1955 through Dec. 1966 on 16-mm microfilm.

Data include:

1. Date (year, month, day, hour, and minute)
2. Observation quality
3. Wavelength
4. Area number
5. Activity
6. Latitude
7. Meridian distance
8. Faculous area
9. Spot area
10. Intensity

Monthly summaries of calcium plage data are available through the cooperation of the McMath-Hulbert Observatory. The sunspot data are compiled from reports from the U. S. Naval Observatory, Sacramento Peak Observatory, and from reports from Europe, Asia, and Japan received through the daily URSIGRAM NETWORK.

Monthly data which appear in Solar-Geophysical Data are available for the period of Jan. 1957 to Oct. 1967.

CORONAL LINE EMISSION INDICES

Provisional Line Emission Indices – Provisional line emission intensity indices for the green (Fe XIV at 5303 A) and red (Fe X at 6374 A) coronal lines are based upon measurements made at 5-deg intervals around the periphery of the solar disk by the High Altitude Observatory at Climax, Colorado, by the Sacramento Peak Observatory at Sunspot, New Mexico, by Pic-du-Midi, France, and by Kislovodsk, U.S.S.R. The measurements are expressed as millionths of an Angstrom of the solar disk center continuum (at the same wavelength as the line) that would contain the same energy as the observed coronal line. The indices have the following meanings:

G_6 = mean of six highest line intensities in quadrant for 5303 A
G_1 = highest value of line intensity in quadrant for 5303 A
R_6 = mean of six highest line intensities in quadrant for 6374 A
R_1 = highest value of line intensity in quadrant for 6374 A

Time corresponds to the approximate time of CMP of the longitude zone represented by the indices. The actual observations were made for the northeast and southeast quadrants 7 days before the CMP date, and for the southwest and northwest quadrants 7 days after the CMP date given.

Final Line Emission Indices – Once every 3 mo Final Coronal Line Emission indices are printed. These tables contain data from Pic-du-Midi, France, and Kislovodsk, U.S.S.R., as well as Sacramento Peak and Climax, U.S.A. The indices are computed in the same manner as for the provisional tables.

Integrated Indices of the Solar Corona – Integrated disk indices as well as integrated whole-sun indices are computed for each day and are published by the High Altitude Observatory at Boulder, Colorado.

The provisional and final line emission indices which appear in Solar-Geophysical Data are available for the period of Jan. 1957 through Sept. 1967. The integrated indices of the solar corona are generally available for the interval 1951 to 1964 with some missing months of data.

FLARE DATA

FLARE REPORTS

Solar flare data include start, maximum, and end time (UT), location, associated plage region, importance, observing conditions, and solar area in square degrees. The H-alpha line width is included when available. Additional comments are coded to reflect observing conditions and associated phenomena. These data are listed as reported from each observing station.

The data announced are those which appear in Solar-Geophysical Data and are available for the period of Jan. 1957 through Oct. 1967.

GROUPED FLARE REPORTS (EDITED)

These revised data are available for the period of July 1955 through June 1964 on either magnetic tape or computer printout.

Data include:

1. Observatory code
2. Date (year, month, and day)
3. Times of beginning and end of flare (UT)
4. Heliographic coordinates in degrees
5. Central meridian distance
6. Importance
7. Observing conditions
8. Time of measurement for tabulated width of H-alpha or area
9. Measured area (square degrees)
10. Corrected area (square degrees)
11. H-alpha line width times 10^2
12. H-alpha intensity
13. Duration (minutes)
14. McMath plage region
15. CMP date (year, month, and day)
16. Central distance (sine of central angle)
17. Time from flare start to maximum (minutes)

DAILY FLARE INDICES

The index, I_f, prepared by HAO, is based on measured flare area in square degrees from many observatories. When no area has been measured, the value of the area is estimated from the importance and position of the flare. The squares of the measured or estimated areas of individual flares are added through each UT day with typical flare duration added at each break in the flare patrol. These data are published in IGY Solar Activity Report Series, Number 35, and are available for the period July 1955 to Dec. 1961 on either printed sheets, punched cards, or magnetic tape.

In addition to the index, I_f, another index of flare activity is presented in the HAO Preliminary Report on Solar Activity. This index is the integrated flare energy from the visible disk, per unit of observing time. These data are available for Dec. 1964 through Dec. 1967.

McMATH SUMMARIES

The McMath-Hulbert Observatory of the University of Michigan has compiled a summary of solar flare activities during the years 1957-1959 and 1961-1962. These data are available on either magnetic tape or computer printout.

Data include:

1. Serial number of flare
2. Date (year, month, and day)
3. Times of beginning and end of flare (UT)
4. Maximum of H-alpha flare
5. Importance
6. Heliographic coordinates in degrees
7. Serial number of McMath plage in which flare occurred
8. Stations reporting

SURGES AND ACTIVE PROMINENCE REGIONS

Reports of surges and active prominence regions have been assembled by the High Altitude Observatory at the University of Colorado from daily data supplied by over 50 cooperating solar observatories. The phenomena reported include:

ADF = Active dark filament
AFR = Active filament region

APR = Active prominence region
BSD = Bright surge on disk
BSL = Bright surge at limb
DSD = Dark surge on disk

These tabulations include:

1. Date of observation
2. Observing station
3. Phenomenon
4. Importance
5. Time of beginning and ending of phenomenon (UT)
6. Heliographic coordinates (latitude, longitude, difference from central meridian)
7. Direction of outflow
8. Remarks

Data are available on printed pages for the period of Oct. 1957 through Dec. 1964.

SOLAR RADIO EMISSION

Solar radio emission data are divided into two categories: single-frequency observations and spectrum observations.

Single-frequency observations are further classified by frequency, time, duration, amplitude, maximum flux density, polarization, and position of the source.

Spectrum observations are further classified by type of burst, frequency, range, time, duration, amount of activity, polarity, and position of the source. The burst types include:

Type I, Noise Storms – This emission is a long series of short bursts more or less randomly distributed over a wide frequency range.

Type II, Slow Drift Bursts – The emission is a narrow band of intense radiation that drifts gradually and often irregularly from high to low frequency.

Type III, Fast Drift Bursts – The bursts are characterized by a rapid drift of the maximum of emission from high to low frequencies. This drift rate, typically 20 MHz per sec at 100 MHz, is a function of frequency.

Type IV, Continuum – This is a featureless (free of details in time and frequency) type of burst in which the signal level increases without fluctuation.

Type V, Short Continuum – This is a broadband Type IV emission of short duration (order of 1 min) that is preceded by a Type III meter-wave burst accompanied by centimeter-wave bursts.

Activity ranges include:

b = Single burst
g = Small group (less than 10 bursts)
G = Large group (more than 10 bursts)
s = Storm (intermittent imminent activity)

Additional classification includes daily data (median, hourly values) and outstanding occurrences (peaks and storms).

Heliographic source position is usually given as an angle (0-360 deg) and distance R_0 from the center of the solar disk.

A list of solar radio observatories precedes the data listings.

STATION LIST

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES	
		LAT	LONG.
ARGENTINA			
SAN MIGUEL	ARGENTINA	34.6S	58.7W
AUSTRALIA			
DAPTO	AUSTRALIA	34.5S	150.8E
FLEURS	AUSTRALIA	33.9S	150.8E
BELGIUM			
HUMAIN	BELGIUM	50.2N	5.3E
BRAZIL			
SAO PAULO	BRAZIL	23.6S	46.6W
CANADA			
OTTAWA	CANADA	45.4N	75.7W
CHINA			
MACAU	PORTUGAL	22.2N	113.6E
CONGO			
LWIRO	BELGIUM	2.3S	28.8E
CZECHOSLOVAKIA			
ONDREJOV	CZECHOSLOVAKIA	49.9N	14.9E
ENGLAND			
CAMBRIDGE	UNITED KINGDOM	52.2N	0.0E
JODRELL BANK	UNITED KINGDOM	53.2N	2.3W
FRANCE			
NANCAY	FRANCE	47.3N	2.2E
GERMAN DEMOCRATIC REPUBLIC			
BERLIN (ALDERSHOF)	GERMAN DEMOCRATIC REPUBLIC	52.4N	13.5E
NEUSTRELITZ	GERMAN DEMOCRATIC REPUBLIC	53.3N	13.1E
POTSDAM	GERMAN DEMOCRATIC REPUBLIC	52.4N	13.1E
GERMAN FEDERAL REPUBLIC			
BONN	GERMAN FEDERAL REPUBLIC	50.4N	7.1E
GREECE			
ATHENS	GREECE	37.9N	23.7E

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES	
		LAT	LONG.
INDIA			
KODAIKANAL	INDIA	10.2N	77.5E
ITALY			
BOLOGNA	ITALY	44.6N	11.4E
TRIESTE	ITALY	45.6N	13.8E
JAPAN			
HIRAISO	JAPAN	36.4N	140.6E
TOKYO (MITAKA)	JAPAN	35.7N	139.7E
TOYOKAWA	JAPAN	34.8N	137.4E
NETHERLANDS			
NERA	NETHERLANDS	52.2N	5.1E
NEW GUINEA			
HOLLANDIA	NETHERLANDS	2.5S	140.5E
NORWAY			
OSLO (HARESTUA)	USA	60.2N	10.8E
POLAND			
KRAKOW	POLAND	50.1N	19.9E
TORUN	POLAND	53.1N	18.6E
REPUBLIC OF SOUTH AFRICA			
GRAHAMSTOWN	REPUBLIC OF SOUTH AFRICA	33.3S	26.5E
SURINAM			
PARAMARIBO	NETHERLANDS	5.8N	55.2W
SWEDEN			
ONSALA	SWEDEN	57.4N	11.9E
UNITED ARAB REPUBLIC			
GIZA	UNITED ARAB REPUBLIC	30.0N	31.2E
UNITED STATES OF AMERICA			
ANN ARBOR, MICHIGAN	USA	42.3N	83.7W
BOULDER, COLORADO	USA	40.0N	105.3W
FORT DAVIS, TEXAS	USA	30.6N	103.9W
HALEAKALA, HAWAII	USA	20.8N	156.9W
HONOLULU, HAWAII	USA	21.3N	158.1W

STATION LIST (Continued)

STATION	OPERATED BY (COUNTRY)	GEOGRAPHIC COORDINATES	
		LAT	LONG.
UNITED STATES OF AMERICA			
ITHACA, NEW YORK	USA	42.5N	76.5W
OWENS VALLEY, CALIFORNIA	USA	36.4N	117.9W
PULLMAN, WASHINGTON	USA	46.7N	117.2W
SAGAMORE HILL, MASSACHUSETTS	USA	42.3N	70.1W
SEATTLE, WASHINGTON	USA	47.8N	122.4W
STANFORD, CALIFORNIA	USA	37.4N	122.2W
UNIVERSITY PARK, PA.	USA	40.8N	77.9W
WASHINGTON, D. C.	USA	38.7N	77.0W
USSR			
ABASTUMANI	USSR	41.8N	42.8E
BYURAKAN	USSR	40.3N	44.3E
GORKIY	USSR	56.1N	44.3E
IRKUTSK	USSR	52.3N	104.3E
KIEV	USSR	50.7N	30.3E
KISLOVODSK	USSR	43.7N	42.5E
KRASNAYA PAKHRA (MOSCOW)	USSR	55.5N	37.3E
PULKOVO	USSR	59.8N	30.3E
RIGA	USSR	56.9N	24.1E
SIMEIS	USSR	44.4N	34.0E
SIMFEROPOL	USSR	44.7N	34.0E
USSURIYSK (VOROSHILOV)	USSR	43.1N	132.2E

FREQUENCY LIST

Single-Frequency Observations

FREQUENCY MHZ	STATION	FREQUENCY MHZ	STATION
10	TOYOKAWA	178	KISLOVODSK
21	TOYOKAWA	184	BOULDER
23	POTSDAM	184	GORKIY
27	TOYOKAWA	191	BYURAKAN
30	POTSDAM	200	GORKIY
60	MACAU	200	HIRAISO
67	TOKYO	200	HOLLANDIA
80	JODRELL BANK	200	HONOLULU
81	GIZA	200	ITHACA
92	GORKIY	200	JODRELL BANK
100	GORKIY	200	NERA
100	KODAIKANAL	200	OSLO
100	TOKYO	200	PARAMARIBO
107	HALEAKALA	200	TOKYO
108	BOULDER	203	BYURAKAN
111	POTSDAM	204	KIEV
125	GRAHAMSTOWN	204	KRASNAYA PAKHRA
127	TORUN	206	GORKIY
136	NERA	207	SIMEIS
150	ONSALA	208	IRKUTSK
167	BOULDER	208	KRASNAYA PAKHRA
169	HUMAIN	208	RIGA
169	LWIRO	208	SIMFEROPOL
169	NANCAY	208	USSURIYSK
178	CAMBRIDGE	209	ABASTUMANI

FREQUENCY LIST (Continued)
Single-Frequency Observations

FREQUENCY MHZ	STATION	FREQUENCY MHZ	STATION
209	BYURAKAN	1500	BERLIN
210	SIMFEROPOL	1500	NEUSTRELITZ
215	RIGA	2000	BERLIN
220	RIGA	2000	TOYOKAWA
220	SIMFEROPOL	2690	UNIVERSITY PARK
221	ABASTUMANI	2695	SAGAMORE HILL
221	SEATTLE	2800	OTTAWA
225	OSLO	2900	BERLIN
227	TOKYO	2950	GORKIY
231	ONDREJOV	2980	ATHENS
231	POTSDAM	2980	NERA
234	POTSDAM	3000	BERLIN
234	RIGA	3000	GORKIY
239	TRIESTE	3000	JODRELL BANK
255	NERA	3000	SIMFEROPOL
260	ONDREJOV	3000	TOKYO
326	TOKYO	3035	UNIVERSITY PARK
327	BOLOGNA	3100	SIMEIS
328	UNIVERSITY PARK	3100	SIMFEROPOL
408	NANCAY	3200	WASHINGTON
408	SAN MIGUEL	3294	STANFORD
408	TOKYO	3750	TOYOKAWA
430	ITHACA	3840	GORKIY
450	BOULDER	4995	SAGAMORE HILL
460	BOULDER	6100	KISLOVODSK
470	BOULDER	7000	SAO PAULO
486	PULLMAN	8800	SAGAMORE HILL
500	HIRAISO	9000	TOKYO
536	ONDREJOV	9100	GORKIY
545	KRASNAYA PAKHRA	9100	NERA
545	NERA	9240	GORKIY
545	PARAMARIBO	9240	IRKUTSK
600	HUMAIN	9300	IRKUTSK
600	KRASNAYA PAKHRA	9375	GORKIY
606	SAGAMORE HILL	9375	IRKUTSK
610	NERA	9375	PULKOVO
610	TOKYO	9400	BERLIN
650	GORKIY	9400	GORKIY
808	ONDREJOV	9400	NEUSTRELITZ
810	GORKIY	9400	ONDREJOV
810	KRAKOW	9400	TOYOKAWA
810	KRASNAYA PAKHRA	9500	NERA
815	CAMBRIDGE	9500	TOKYO
960	UNIVERSITY PARK	9530	WASHINGTON
1000	SIMEIS	9787	GORKIY
1000	SIMFEROPOL	10700	UNIVERSITY PARK
1000	TOYOKAWA	15000	KISLOVODSK
1415	SAGAMORE HILL	17000	TOKYO
1420	DAPTO	19000	GORKIY
1440	FLEURS	25000	BONN

Sweep-Frequency Observations

Frequency MHz	Station
5 - 210	Dapto
6 - 25	Dapto
7.6 - 41	Boulder
10 - 25	Dapto
10 - 70	Dapto
10 - 210	Dapto
10 - 580	Fort Davis
19 - 39	Sagamore Hill
25 - 320	Fort Davis
25 - 580	Fort Davis
50 - 320	Fort Davis
70 - 250	Dapto
100 - 580	Ann Arbor
100 - 580	Fort Davis
450 - 1000	Owens Valley
2100 - 3900	Fort Davis

DATA AVAILABLE PRIOR TO 1957

The following solar radio emission data, acquired prior to 1957, are available:

Daily Flux

Station	Frequency	Dates
Boulder	167 MHz	Oct. 1955 - Dec. 1956
Boulder	460 MHz	Oct. 1955 - Dec. 1956

Outstanding Events

Boulder	167 MHz	Feb. - Dec. 1956

DAILY FLUX AND OUTSTANDING EVENTS (SINGLE FREQUENCY)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
ABASTUMANI	1957				--B
41.8N 42.8E	1958	BBB	BBB	BBB	BBB
209 MHZ	1959	BBB	BBB	BBB	BBB
	1960		BBB	BBD	BDD
	1961	DD-			
ABASTUMANI	1964	-DD	DDD	DDD	DDD
41.8N 42.8E	1965	DDD	DDD	DDD	DDD
221 MHZ	1966	DDD	DDD	DDD	D--
	1967	--D	D--		
ATHENS	1965	BBB	BBB	BBB	BBB
37.9N 23.7E	1966	BBB	BBB	BBB	
2980 MHZ					
BERLIN	1957			B-B	BBB
52.4N 13.5E	1960	DDD	DDD	DDD	DDD
1500 MHZ	1961	DDD	DDD	DDD	DDD
	1962	DDD	DDD	DDD	DDD
	1963	--D	DDD	DDD	DDD
	1964	BB-	-DD	DDD	D--
	1965	BBB		--B	BBB
	1966	BBD		-EE	-EE
	1967	--B	BBB	BB-	
BERLIN	1964	EE-			
52.4N 13.5E	1965	EEE		--E	EEE
2000 MHZ	1966	EE-		-EE	-EE
	1967	--E	EEE	EE-	
BERLIN	1957			E--	
52.4N 13.5E					
2900 MHZ					
BERLIN	1957			--E	EEE
52.4N 13.5E	1965	EEE		--E	EEE
3000 MHZ	1966	EE-		-EE	-EE
	1967	--E	EEE	EE-	
BERLIN	1957			B-B	BBB
52.4N 13.5E	1963	DD-			
9400 MHZ	1964	BB-	-DD	DDD	D--
	1965	BBB		--B	BBB
	1966	BBD		-EE	-EB
	1967	--B	BBB	BB-	
BOLOGNA	1964	-D-	-D-		
44.6N 11.4E	1965	BD-	-DD	DDB	BDB
327 MHZ	1966	DDB	B--	--B	DDD
BONN	1967	DDD	DDD	DD-	
50.4N 7.1E					
35000 MHZ					
BOULDER	1960				EEE
40.0N 105.3W	1961	EEE	EEE	EEE	EEE
108 MHZ	1962	EEE	EEE	EEE	EEE
	1963	EEE	EEE	EEE	EEE
	1964	EEE	EEE	EEE	EEE
	1965	EEE	EEE	EEE	EEE
	1966	EEE	E--		
BOULDER	1957	BBB	B--	BBB	BBB
40.0N 105.3W	1958	BBB	BBB	BBB	BBB
167 MHZ	1959	EEE	EEE	EEE	EEE
	1960	EEE	EEE	EEE	
BOULDER	1967	--E	-EE	EEE	EE-
40.0N 105.3W					
184 MHZ					
BOULDER	1957			BBB	BB-
40.0N 105.3W					
450 MHZ					
BOULDER	1957	BBB	BBB		
40.0N 105.3W					
460 MHZ					
BOULDER	1957				--B
40.0N 105.3W	1958	BBB			
470 MHZ					
BYURAKAN	1958	BBB	BB-		
40.3N 44.3E					
191 MHZ					
BYURAKAN	1959		-DD	D--	
40.3N 44.3E					
203 MHZ					

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
BYURAKAN 40.3N 44.3E 209 MHZ	1957			DDD	BBB
CAMBRIDGE 52.2N 0.0E 178 MHZ	1957			BBB	BBB
	1958	BBB	BBB	BBB	BBB
CAMBRIDGE 52.2N 0.0E 815 MHZ	1957			BBB	BBB
	1958	BBB	BBB	BBB	BBB
DAPTO 34.5S 150.8E 1420 MHZ	1960	BBB	BBB	BBB	
GIZA 30.0N 31.2E 81 MHZ	1957				--E
	1958	EEE			
GORKIY 56.1N 44.3E 92 MHZ	1965		--D		
GORKIY 56.1N 44.3E 100 MHZ	1967	-BB	BBB	B--	
GORKIY 56.1N 44.3E 184 MHZ	1965		--D		
GORKIY 56.1N 44.3E 200 MHZ	1967	-BB	BBB	B--	
GORKIY 56.1N 44.3E 206 MHZ	1957			B-B	BB-
	1958	-BB	BBB	BBB	BB-
	1965				D--
GORKIY 56.1N 44.3E 650 MHZ	1967	BBB	BBB	B--	
GORKIY 56.1N 44.3E 810 MHZ	1958				--B
	1959		--B		
GORKIY 56.1N 44.3E 2950 MHZ	1967	BBB	BBB	B--	
GORKIY 56.1N 44.3E 3000 MHZ	1957			B-B	-B-
	1958	-BB	DDB	DB-	DD-
	1959	-DD	BBB	DBD	
GORKIY 56.1N 44.3E 3840 MHZ	1967	-EB	BBB	B--	
GORKIY 56.1N 44.3E 9100 MHZ	1967	BBB	BBB	B--	
GORKIY 56.1N 44.3E 9240 MHZ	1965				D--
GORKIY 56.1N 44.3E 9375 MHZ	1957			B-B	BB-
	1958	DBB	DDB	DBD	
	1959	-DD	BBB	BBD	DDD
	1960	DDB			DD-
	1961		-D-		
GORKIY 56.1N 44.3E 9400 MHZ	1965		--D	DD-	D--
GORKIY 56.1N 44.3E 9787 MHZ	1964	BBB	DDD	D--	
GORKIY 56.1N 44.3E 19000 MHZ	1959		BDB	BBD	DD-
	1960			DDD	-D-
GRAHAMSTOWN 33.3S 26.5E 125 MHZ	1958		-EE	EEE	EE-

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
HALEAKALA	1965		--E	EEE	EEE
20.8N 156.9W	1966	E-E	--E		
107 MHZ	1967		--E		
HIRAISO	1957			B--	DBB
36.4N 140.6E	1958	B-B	BBB	BBB	-BB
200 MHZ	1959	BBB	BBB	BBB	DBB
	1963			-BB	BB-
	1964	DBB		BDD	DBD
	1965	-D-	-BB	BBB	
	1966		B-B	B-B	B--
	1967	BB-			
HIRAISO	1964	DDD		DDD	DDD
36.4N 140.6E	1965	-D-	-BB	BBD	
500 MHZ	1966		B-B	--B	B--
HOLLANDIA	1957			EEE	EEE
2.5S 140.5E	1958	-E-		--E	
200 MHZ	1959	EEE	EEE	EEE	EEE
	1960	EE-			
HONOLULU	1957			E-E	EEE
21.3N 158.1W	1958	EEE	EEE	EEE	EEE
200 MHZ	1959	EEE	EEE	EE-	
HUMAIN	1957			BBB	BBB
50.2N 5.3E	1958	BBB	BBB	BBB	BBB
169 MHZ	1959	BB-			
HUMAIN	1957			BBB	BBB
50.2N 5.3E	1958	BEB	BBB	BBB	BBB
600 MHZ	1959	BBB	BBB	-BB	BBB
	1960	-BB	BB-	BB-	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBB	BBB
	1967	BBB	BBB	BB-	

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
IRKUTSK	1958				--B
52.3N 104.3E	1959	BBB	BBB	BDB	BBB
208 MHZ	1960		DB-		
	1961	-B-	BBB	BBB	-BB
	1962	DBB	DBD	--B	DDD
	1963	B--			
	1964	--B		--D	BBB
	1965	DDB	DDD	BDD	DB-
	1966	--B	BB-	B--	
IRKUTSK	1965			--D	-BB
52.3N 104.3E	1966	BBB	B--		
9240 MHZ					
IRKUTSK	1964	--D	D--	DDD	
52.3N 104.3E	1965	DDB	DDD		
9300 MHZ					
IRKUTSK	1966			--E	
52.3N 104.3E	1967	--B	BBB		
9375 MHZ					
ITHACA	1957	-BB	BBB	BBB	BBB
42.5N 76.5W	1958	BBB	BBB	BBB	BBB
200 MHZ					
ITHACA	1965	-E-			
42.5N 76.5W					
430 MHZ					
JODRELL BANK	1957			B-E	EDD
53.2N 2.3W	1958	EDE	EED	EDD	EBD
80 MHZ	1959	E--			
JODRELL BANK	1957			B-E	EDD
53.2N 2.3W	1958	EDE	EED	EDD	EBD
200 MHZ	1959	E--			
JODRELL BANK	1957			B-E	EDD
53.2N 2.3W	1958	EDE	EED	EDD	EBD
3000 MHZ	1959	E--			

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
KIEV	1964			DDD	-D-
50.7N 30.3E	1965	DDD	DDD	-DD	DDD
204 MHZ	1966	DDD	DDD	DDD	D--
	1967	--D			
KISLOVODSK	1957			BBB	BDB
43.7N 42.5E	1958	BBB	BBB	BBB	EBB
178 MHZ	1959	BBB	BBB	BBB	BBB
	1960		BBB	BBB	BBB
	1961	B-B	BDB	BBB	BBB
	1962	DBD	BBD	DDB	DBB
	1963	B--			
	1964	-DD	DDD	D--	
KISLOVODSK	1964	-DD	DDD	DD-	DDD
43.7N 42.5E	1965	DDD	DDD	DDD	DDD
6100 MHZ	1966	DDB	BDD	BDB	B--
	1967	--B	B--		
KISLOVODSK	1964				-DD
43.7N 42.5E	1965	DDD	DDD	DDD	DD-
15000 MHZ	1966	DDD	DDD	DDB	B--
	1967	--B	B--		
KODAIKANAL	1966	E--			
10.2N 77.5E					
100 MHZ					
KRAKOW	1957				BBB
50.1N 19.9E	1958	BBB	BB-		BBB
810 MHZ	1959	BBE	BB-	BBB	DBB
	1960	B-B	-BB		
KRASNAYA PAKHRA	1964	BBB	BBB	DBB	BBB
55.5N 37.3E	1965	BBB	BBB	BDB	BBB
204 MHZ	1966	BBB	BBB	BBB	B--
	1967	--B	B--		
KRASNAYA PAKHRA	1957			BBB	BBB
55.5N 37.3E	1958	BBB	BBB	B-B	BBB
208 MHZ	1959	BBB	BBB	BBB	BBB
	1960		BBB	-BB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BB-			

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
KRASNAYA PAKHRA	1959	BBB	BBB	BBB	BBB
55.5N 37.3E	1960		BBB	-B-	
545 MHZ	1961	BBB	BBB	BBB	BBB
	1962	BB-			
KRASNAYA PAKHRA	1957			BBB	BBB
55.5N 37.3E	1958	BBB	BBB	BBB	B--
600 MHZ					
KRASNAYA PAKHRA	1959	--D			E--
55.5N 37.3E					
810 MHZ					
LWIRO	1957			B-B	BBB
2.3S 28.8E	1958	BBB	BBB	BBB	BBB
169 MHZ	1959	--B	BB-		
MACAU	1958		-DD	DDD	DDD
22.2N 113.6E	1959	DDD			
60 MHZ					
NERA	1957			EBB	BBB
52.2N 5.1E	1958	BBB	BBB	BBB	BBB
200 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBD
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBE	BBB
	1967	BBB	BBE	E--	
NERA	1959	D-D	DD-	DDD	DDD
52.2N 5.1E	1960	DDD	D--		
255 MHZ					
NERA	1957			EEE	EEE
52.2N 5.1E	1958	EEE	EEE	EEE	EEE
545 MHZ	1959	EEE	EEE	EEE	EEE
	1960	EEE	EEE	EEE	EEE
	1961	EEE	EEE	EEE	EEE
	1962	EEE	EEE	EEE	EEE
	1963	EEE	EEE	EEE	EEE
	1964	EEE	EEE	EEE	EE-
	1965	EEE	EEE	E-E	E--

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
NERA	1965	--E	EEE	EEE	EEE
52.2N 5.1E	1966	EEE	EEE	EEE	EE-
610 MHZ	1967	EEE	EEE	E--	
NERA	1957			EEE	EEE
52.2N 5.1E	1958	EEE	EEE	EEE	EEE
2980 MHZ	1959	EEE	EEE	EEE	EEE
	1960	EEE	EEE	EEE	EEE
	1961	EEE	EEE	EEE	EEE
	1962	EEE	EEE	EEE	EEE
	1963	EE-	EEE	EEE	EEE
	1964	EEE	EEE	EEE	EE-
	1965	EEE	EEE	-EE	EEE
	1966	EEE	EEE	EEE	EE-
	1967	EEE	EEE	E--	
NERA	1960	EEE	EE-	EEE	EEE
52.2N 5.1E	1961	EEE	EEE	EEE	EEE
9100 MHZ	1962	EEE	EEE	EEE	EEE
	1963			--E	
NERA	1965				--E
52.2N 5.1E	1966	EEE	EEE	EEE	EE-
9500 MHZ	1967	EEE	EEE	E--	
NEUSTRELITZ	1963	BBB	B--		
53.3N 13.1E	1966			--E	-EB
1500 MHZ	1967	BBB	BBB	BB-	
NEUSTRELITZ	1963	--D	B--		
53.3N 13.1E	1966			-EE	-EB
9400 MHZ	1967	--B	BBB	BB-	
ONDREJOV	1958				BB-
49.9N 14.9E	1959	BBB	BBB	BBB	BBB
231 MHZ	1960	BB-	BBB	BBB	BBB
	1961	BBB	BBB	BBB	B--
ONDREJOV	1962		BBB	BBB	BBB
49.9N 14.9E	1963	BBB	BBB	BBB	BB-
260 MHZ	1964	DBB	DB-	-BB	DDD
	1965	BDD	B-B	-BB	BBB
	1966	BBB	BB-	BB-	BBB
	1967	BBB	BBB	-B-	

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
ONDREJOV	1957			B-B	BBB
49.9N 14.9E	1958	BBB	BBB	BB-	BEE
536 MHZ	1959	BBB	BBB	BBB	BEE
	1960	EE-	BBB	DBB	BBB
	1961	BBB	BBB	BBB	
	1962		BBB	DBB	BBB
	1963	BDD	DBB	DBB	BB-
	1964	DBB	DD-	-DB	DDD
	1965	DDD	D-D	-DD	BD-
	1966		-B-	BB-	BBB
	1967	BBB	BBB	-B-	
ONDREJOV	1959		-BB	BDB	BBB
49.9N 14.9E	1960	BB-	BBB	BBB	BBB
808 MHZ	1961	BBB	BBB	BBB	
	1962		BBB	DBB	BDB
	1966			EE-	EEE
	1967	EEE	EEE	-E-	
ONDREJOV	1961	--E	-EE	E-E	
49.9N 14.9E	1962		EE-		
9400 MHZ	1966				EE-
	1967	--E	EEE	-E-	
ONSALA	1957			DDD	DD-
57.4N 11.9E	1958	--D	DDD	DDD	DDD
150 MHZ	1959	-DD	DDD	DDD	
OSLO	1957			BBB	BB-
60.2N 10.8E	1958	-BB	BBB	-BB	BB-
200 MHZ	1959	-BB	BBB	BBB	
OSLO	1963				BD-
60.2N 10.8E	1964	-DB	DDB	DBB	DD-
225 MHZ	1965	-DD	DDB	DDD	BD-
	1966	-DB	BBB	BBB	BB-
	1967	-BB	BBB	BBB	
OTTAWA	1957	BBB	BBB	BBB	BBB
45.4N 75.7W	1958	BBB	BBB	BBB	BBB
2800 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBD	BBB
	1967	BDB	BBB	BBB	

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
PARAMARIBO	1957			EE-	
5.8N 55.2W	1959	-EE	EEE	-EE	EEE
200 MHZ	1960	EEE	EEE	EEE	EEE
	1961	EEE	EEE	EEE	E-E
	1962	EEE	EE-	--E	EEE
	1963	EEE	EEE	EEE	EEE
	1964	EEE	E-E	EEE	EEE
	1965	--E	-EE	EEE	EEE
	1966	EE-			
	1967	BBB	EEE	E--	
PARAMARIBO	1957			EE-	
5.8N 55.2W	1959	-EE	EEE	-EE	EEE
545 MHZ	1960	EEE	EEE	EEE	EEE
	1961	EEE	EEE	EEE	E-E
	1962	EEE	EE-	--E	EEE
	1963	EEE	EEE	EEE	EEE
	1964	EEE	E-E	EEE	EEE
	1965	--E	-EE	EEE	EEE
	1966	EE-			
POTSDAM	1957			EEE	EEE
52.4N 13.1E	1958	EEE	EEE	EEE	EEE
23 MHZ	1959	-EE	EEE	EEE	EEE
	1960	-EE	EEE	EEE	EEE
	1961	EE-			
	1963	--E	EEE	EEE	EE-
	1964	EEE	E-E	E--	-EE
	1965	E-E	EEE	E-E	EEE
	1966	E-E	EEE	EEE	EEE
	1967	EEE	EEE	EEE	
POTSDAM	1961	--E	EE-		
52.4N 13.1E					
30 MHZ					
POTSDAM	1963	--E	BEB	-BB	--B
52.4N 13.1E	1964	E-E	E-E		--E
111 MHZ	1965	B--	EEE	E-B	BEB
	1966	BEB	BEB	BBB	EBB
	1967	BBB	BBB	BBB	
POTSDAM	1957			BBB	BBB
52.4N 13.1E	1958	BBB	BBB	BBB	BBB
231 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
POTSDAM	1959	-BB	BBB	BBB	BBB
52.4N 13.1E	1960	BBB	BBB	BBB	BBB
234 MHZ	1961	BBB	BB-		
	1963	--D	BBB	DBB	-DB
	1964	BDD	DDD	DDD	DDD
	1965	BDD	BBD	DDB	BDB
	1966	BDB	BBB	BBB	BBB
	1967	BBB	BBB	BBB	
PULKOVO	1957			--B	B-D
59.8N 30.3E	1958	B--			
9375 MHZ					
PULLMAN	1965				--E
46.7N 117.2W	1966	E--		EE-	E-E
486 MHZ	1967	E-E			
RIGA	1960		-BB	B--	
56.9N 24.1E	1961		DBB	BBB	BB-
208 MHZ					
RIGA	1959			DDB	DBB
56.9N 24.1E	1960		D--		
215 MHZ					
RIGA	1962			--B	BBB
56.9N 24.1E	1963	B--			
220 MHZ	1964	BDB	DDD	DB-	
	1965	-DD	BBD	D--	
	1966		-E-		
RIGA	1965				-BB
56.9N 24.1E	1966	BDB	E--		
234 MHZ					
SAGAMORE HILL	1965				BBB
42.3N 70.1W	1966	BBB	EEE	BBD	EEE
606 MHZ	1967	BBB	EEE	EEE	E--
SAGAMORE HILL	1966	BBB	EEE	BBB	EEE
42.3N 70.1W	1967	BBB	EEE	EEE	E--
1415 MHZ					
SAGAMORE HILL	1965				-BB
42.3N 70.1W	1966	BBB	EEE	BBB	EEE
2695 MHZ	1967	BBB	EEE	EEE	E--

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
SAGAMORE HILL	1966		EEE	BBB	EEE
42.3N 70.1W	1967	BBB	EEE	EEE	E--
4995 MHZ					
SAGAMORE HILL	1965				-BB
42.3N 70.1W	1966	BBB	EEE	BBB	EEE
8800 MHZ	1967	BBB	EEE	EEE	E--
SAN MIGUEL	1967	--E	BBB	-B-	
34.6S 58.7W					
408 MHZ					
SAO PAULO	1967			--B	
23.6S 46.6W					
7000 MHZ					
SIMEIS	1957				-DD
44.4N 34.0E	1958	DDD	DDD	D-D	DDD
207 MHZ					
SIMEIS	1966	--E			
44.4N 34.0E					
1000 MHZ					
SIMEIS	1966	--B			
44.4N 34.0E	1967	--B	B--		
3100 MHZ					
SIMFEROPOL	1957				--B
44.7N 34.0E	1958	BBB	BBB	BBB	DBD
208 MHZ	1959	BBB	BBB	BBB	BBB
	1960		BBB	BBB	BB-
	1961	B--			
SIMFEROPOL	1957			BBB	BB-
44.7N 34.0E					
210 MHZ					
SIMFEROPOL	1964	-DD	DDD	DBD	-D-
44.7N 34.0E	1965	--D	D--	-DD	D--
220 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
SIMFEROPOL	1966		E--		
44.7N 34.0E					
1000 MHZ					
SIMFEROPOL	1959	--B	BBB	DBD	DDB
44.7N 34.0E	1960		-B-	BBB	
3000 MHZ					
SIMFEROPOL	1964	DDD	DDD	DDD	DDD
44.7N 34.0E	1965	--D	DD-	-DD	D-B
3100 MHZ	1966		B-D	B--	B--
TOKYO	1957			DDD	-DD
35.7N 139.7E	1958		D-D	D--	
67 MHZ	1959	DDD	DDD	DDD	DDD
	1961				DDD
	1962	DDD	DDD	DDD	DDD
	1963	DDD	DDD	DDD	
TOKYO	1957			DDD	-DD
35.7N 139.7E	1958		D-D	D--	
100 MHZ	1959	DDD	DDD	DDD	DDD
	1960				--D
	1961				DDD
	1962	DDD	DDD	DDD	DDD
	1963	DDD	DDD	DDD	
TOKYO	1957			BBB	BBB
35.7N 139.7E	1958	BBB	BBB	BBB	BBB
200 MHZ	1959	BBB	BBB	BBB	BBB
	1960				--B
	1961			-D-	DDD
	1962	DBB	BDD	DDD	BDD
	1963	DDD	BBD	DDB	BBD
	1964	DDD	DD-		
TOKYO	1964			--D	DDD
35.7N 139.7E	1965	DDD	DDD	DDD	BDB
227 MHZ	1966	BDB	DBD	BBB	BDD
	1967	DBB	-B-		
TOKYO	1966			--E	EE-
35.7N 139.7E	1967	EE-			
326 MHZ					
TOKYO	1966	--E	-E-	E-E	EE-
35.7N 139.7E	1967	EEE			
408 MHZ					

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
TOKYO	1965				E-E
35.7N 139.7E	1966	--E	-E-	E-E	EE-
610 MHZ	1967	EEE	-E-		
TOKYO	1957			BBB	BBB
35.7N 139.7E	1958	BBB	BBB	BBB	BBB
3000 MHZ	1959	BBB	BBB	BBB	BBB
	1960				--D
	1961			-D-	DDD
	1962	DBB	BDD	DDD	BDD
	1963	DDD	BBD	DDB	
TOKYO	1957			BB-	
35.7N 139.7E	1960				--B
9000 MHZ	1961			-D-	
TOKYO	1957			--B	BBB
35.7N 139.7E	1958	BBB	BBB	BBB	BBB
9500 MHZ	1959	BBB	BBB	BBB	BBB
	1961				DDD
	1962	DBB	BDD	DDD	BDD
	1963	DDB	BBD	DDB	BBD
	1964	DDD	DD-		
TOKYO	1964		-DD	DDD	DDD
35.7N 139.7E	1965	DDD	DDD	DDD	DDB
17000 MHZ	1966	DDB	BBD	BBB	BBB
	1967	BBB	-B-		
TORUN	1958				BBB
53.1N 18.6E	1959	BBB	BBB	BBB	BBB
127 MHZ	1960				--D
TOYOKAWA	1966				DD-
34.8N 137.4E					
10 MHZ					
TOYOKAWA	1966				DD-
34.8N 137.4E					
21 MHZ					
TOYOKAWA	1966				DD-
34.8N 137.4E					
27 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
TOYOKAWA	1957			DBB	B--
34.8N 137.4E	1958	--B	BB-		
1000 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBB	BBB
	1967	BBB	BBB	B--	
TOYOKAWA	1957			DBB	B--
34.8N 137.4E	1958	--B	BB-		
2000 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBB	BBB
	1967	BBB	BBB	B--	
TOYOKAWA	1957			DBB	B--
34.8N 137.4E	1958	--B	BB-		
3750 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BEB	BBB	BBB	BBB
	1967	BBB	BBB	B--	
TOYOKAWA	1957			DBB	B--
34.8N 137.4E	1958	--B	BB-		
9400 MHZ	1959	BBB	BBB	BBB	BBB
	1960	BBB	BBB	BBB	BBB
	1961	BBB	BBB	BBB	BBB
	1962	BBB	BBB	BBB	BBB
	1963	BBB	BBB	BBB	BBB
	1964	BBB	BBB	BBB	BBB
	1965	BBB	BBB	BBB	BBB
	1966	BBB	BBB	BBB	BBB
	1967	BBB	BBB	B--	
TRIESTE	1966	--B	BBB	BBB	BBB
45.6N 13.8E	1967	BBB	BBB		
239 MHZ					

D = Daily Flux E = Outstanding Events B = Both

DAILY FLUX AND OUTSTANDING EVENTS (Single Frequency) (Continued)

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
UNIVERSITY PARK 40.8N 77.9W 328 MHZ	1965		EEE	-E-	BDB
	1966	EEE	BDD	EEE	E--
	1967		E--		
UNIVERSITY PARK 40.8N 77.9W 960 MHZ	1965		EEE	EE-	
	1966	EEE	BDD	BEB	BBB
	1967	EEE	E-E	E--	
UNIVERSITY PARK 40.8N 77.9W 2690 MHZ	1965	DBB	EEE	E--	BDB
	1966	EEE	BDD	BBB	BBB
	1967	EEE	E-E	E--	
UNIVERSITY PARK 40.8N 77.9W 3035 MHZ	1964				--E

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
UNIVERSITY PARK 40.8N 77.9W 10700 MHZ	1965	DBD	EEE	E-E	BDB
	1966	EEE	BDD	BBB	BBB
	1967	EEE	E-E	E--	
USSURIYSK 43.1N 132.2E 208 MHZ	1959		--B	BEB	BBB
	1960	BBB	BBB	BBB	BB-
	1964	BDD	DD-	DDB	DBB
	1965	BBB	DBD	BDB	BBB
	1966	BBB	BBB	BBB	B--
	1967	--B	B--		
WASHINGTON 38.7N 77.0W 3200 MHZ	1958	-BB	BBB	BBB	BBB
	1959	BBB	B--		
WASHINGTON 38.7N 77.0W 9530 MHZ	1958	-BB	BBB	BBB	BBB
	1959	BBB	B--		

D = Daily Flux E = Outstanding Events B = Both

SPECTRUM (SWEEP FREQUENCY) OBSERVATIONS

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
ANN ARBOR	1958				DDD
42.3N 83.7W	1959	DDD	DDD	DDD	DDD
100-580 MHZ	1961	DDD	DDD	D--	
BOULDER	1959			DDD	DDD
40.0N 105.3W	1960	DDD	DDD	DDD	DDD
7.6-41 MHZ	1961	DDD	DDD	DDD	DDD
	1962	DDD	DDD	DDD	DDD
	1963	DDD	DDD	DDD	DDD
	1964	DDD	DDD	DDD	DDD
	1965	DDD	DDD	DDD	DDD
	1966	DDD	DDD	DDD	DDD
	1967	DDD	DDD	DDD	
DAPTO	1963			DDD	DDD
34.5S 150.8E	1964	DDD	DDD	DDD	
5-210 MHZ,					
DAPTO	1965		--D		DDD
34.5S 150.8E					
6-25 MHZ					
DAPTO	1965		DD-		
34.5S 150.8E					
10-25 MHZ					
DAPTO	1966				DD-
34.5S 158.8E	1967	DDD	DDD	DDD	
10-70 MHZ					
DAPTO	1966				DD-
34.5S 158.8E	1967	DDD	DDD	DDD	
10-210 MHZ					

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
DAPTO	1966				DD-
34.5S 158.8E	1967	DDD	DDD	DDD	
70-250 MHZ					
FORT DAVIS	1967	DDD	DDD	DDD	
30.6N 103.9W					
10-580 MHZ					
FORT DAVIS	1965		DDD	DDD	DDD
30.6N 103.9W	1966	DDD	DDD	DDD	DDD
25-320 MHZ					
FORT DAVIS	1959	DDD	DDD	DDD	DDD
30.6N 103.9W	1960	DDD	DDD	DDD	DDD
25-580 MHZ	1961	DDD	DDD	DDD	DDD
	1962	DDD	DDD	DDD	DDD
FORT DAVIS	1963	DDD	DDD	DDD	DDD
30.6N 103.9W	1964	DDD	DDD	DDD	DDD
50-320 MHZ	1965	DDD			
FORT DAVIS	1958		--D	DDD	DDD
30.6N 103.9W					
100-580 MHZ					
FORT DAVIS	1960	--D		DDD	
30.6N 103.9W	1961	DDD	DDD	DDD	D--
2100-3900 MHZ	1962		DDD	DDD	
OWENS VALLEY	1960				-DD
36.4N 117.9W	1961	DDD	DDD	DDD	DD-
450-1000 MHZ					
SAGAMORE HILL	1965	--D	DDD	DDD	DDD
42.3N 70.1W	1966	DDD	DDD	DDD	DDD
19-39 MHZ	1967	DDD	DDD		

D = Daily Flux E = Outstanding Events B = Both

INTERFEROMETRIC OBSERVATIONS

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
NANCAY	1957	DDD	DDD	DDD	DDD
47.3N 2.2E	1958	DDD	DDD	DDD	DDD
169 MHZ	1959	DDD	DDD	DDD	DDD
	1960	DDD	DDD	DDD	DDD
	1961	DDD	DDD	DDD	DDD
	1962	DDD	DDD	DDD	DDD
	1963	DDD	DDD	DDD	DDD
	1964	DDD	DDD	DDD	DDD
	1965	D--		-DD	DDD
	1966	DDD	D-D	DDD	DDD
	1967	DDD	D-D	DDD	D--
NANCAY	1965				-DD
47.3N 2.2E	1966	DDD	DDD	DDD	DDD
408 MHZ	1967	DDD	DDD	DDD	D--

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
NERA	1964	D--			
52.2N 5.1E	1965	D--		--D	DD-
136 MHZ	1966	DDD	DDD	-DD	-DD
	1967	DD-	DDD	D--	
NERA	1957			DDD	-D-
52.2N 5.1E	1958		--D	DDD	DDD
255 MHZ	1959	DDD	DDD	DDD	DDD
	1960	DDD	DDD	DDD	DDD
	1961	DDD	DDD	DDD	DDD
	1962	-DD	DD-	-DD	DDD
	1963	D-D	DDD	-DD	D--
	1964			-D-	D--
	1965	D--	-D-	--D	DD-
	1966	DDD	DDD	DDD	-DD
	1967	DDD	DDD	D--	
SEATTLE	1962	D--	DDD	DDD	DDD
47.8N 122.4W	1963	-DD	DDD	D--	
221 MHZ	1965		-DD	DDD	DD-

D = Daily Flux E = Outstanding Event B = Both

SPECTROHELIOGRAMS

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
FLEURS	1964				--D
33.9S 150.8E	1965	DDD	DDD	DDD	DDD
1440 MHZ	1966	DDD	DDD	DDD	D-D
	1967	DDD	DDD	DD-	

STATION LAT LONG. FREQ	YEAR	JFM	AMJ	JAS	OND
STANFORD	1960		DDD	DDD	DD-
37.4N 122.2W	1961	-DD			
3294 MHZ	1962		DDD	DDD	DDD
	1963	D--	DDD	DDD	DDD
	1964	DDD	DDD	DDD	DDD
	1965	DDD	DDD	DDD	DDD
	1966	DDD	DDD	DDD	DDD
	1967	DDD	DDD	DDD	

D = Daily Flux E = Outstanding Event B = Both

SOLAR ACTIVITY SUMMARIES

AFCRL DIGITIZED DATA

Punched cards containing solar activity data for each day from Jan. 1955 through Feb. 1967 are made available through the cooperation of the Air Force Cambridge Research Laboratories, Bedford, Massachusetts.

Date include:

1. Magnetic Character Figure (C Index)
2. Magnetic Kp Index
3. Magnetic Ap Index
4. Relative Zurich Sunspot Number
5. Date (year, month, and day)

HIGH ALTITUDE OBSERVATORY (HAO) REPORTS

These reports summarize solar activity as a function of solar rotation.

Data include:

1. Emission line intensity of the solar corona
2. Solar hydrogen flares
3. Sunspots
4. Plages
5. Active solar regions
6. Balmer-Alpha solar limb prominences

The following is a listing of the data available:

Report Number	Dates	Solar Rotation No.
18	Mar. 28 - Apr. 25, 1951	1305
21	June 23 - Oct. 11, 1953	1335 - 1338
22	Oct. 10 - Dec. 31, 1953	1339 - 1341
23	Dec. 31, 1953 - Mar. 24, 1954	1342 - 1344
24	Mar. 23 - July 11, 1954	1345 - 1348
25	July 10 - Sept. 30, 1954	1349 - 1351
26	Sept. 29, 1954 - Jan. 18, 1955	1352 - 1355

HIGH ALTITUDE OBSERVATORY REPORTS (Continued)

Report Number	Dates	Solar Rotation No.
27[a]	Jan. 10, 1953 - Jan. 1, 1954	1329 - 1341
28[b]	Apr. 24 - Dec. 26, 1951	1306 - 1314
29	Jan. 18 - Apr. 9, 1955	1356 - 1358
31	June 30 - Sept. 20, 1955	1362 - 1364
32	Sept. 20, 1955 - Jan. 7, 1956	1365 - 1368
33	Jan. 7 - Mar. 29, 1956	1369 - 1371
35	June 19 - Oct. 6, 1956	1375 - 1378
37[c]	Dec. 12, 1941 - May 21, 1944	
39	Apr. 15 - Sept. 25, 1957	1386 - 1391
40	Sept. 19, 1957 - Jan. 12, 1958	1392 - 1395
41[d]	Mar. 21 - Dec. 31, 1950	
42	Jan. 13 - Apr. 4, 1958	1396 - 1398
43	Apr. 5 - June 25, 1958	1399 - 1401
44	June 25 - Oct. 12, 1958	1402 - 1405
45	Oct. 12, 1958 - Jan. 2, 1959	1406 - 1408
46	Jan. 2 - Mar. 25, 1959	1409 - 1411
47	Mar. 25 - June 15, 1959	1412 - 1414
48[e]	Dec. 26, 1951 - Jan. 11, 1953	1315 - 1328
50	Oct. 2 - Dec. 22, 1959	1419 - 1421
51	Dec. 23, 1959 - Mar. 13, 1960	1422 - 1424
52	Mar. 14 - July 1, 1960	1425 - 1428
54	Sept. 20, 1960 - Jan. 7, 1961	1432 - 1435
55	A description of the solar phenomena and the technique of their presentation in the solar activity summary issued four times a year	
56	Integrated Indices of the Solar Corona 1961	
57	Integrated Indices of the Solar Corona 1960	
58	Integrated Indices of the Solar Corona 1962	
59	Report of Solar Data in association with the solar eclipse of July 20, 1963	
60	Integrated Indices of the Solar Corona 1963	
61	Integrated Indices of the Solar Corona 1964	
62	Observations of Solar Features, May 24 - June 5, 1965, as supporting information for the May 30 eclipse	

[a]Summary of Solar Limb Prominences 1953. [b]Summary of Solar Limb Prominences 1951. [c]Climax Coronal Intensities. [d]Flare Activity Index. [e]Summary of Solar Limb Prominences 1952.

INTERNATIONAL ASTRONOMICAL UNION QUARTERLY BULLETINS

IAU Quarterly Bulletins on solar activity are available for the period of Jan. 1957 through June 1966 on 35-mm microfilm.

These data have been corrected for preliminary errors and are made available approximately 18 mo after the data were originally taken.

Data include:

1. Sunspots - sunspot relative numbers and sunspot areas
2. Coronal Emission Line Indices
3. Solar radio emission
4. Flare Indices

IGY SOLAR ACTIVITY REPORT SERIES

These data are made available through the cooperation of World Data Center A. The following is a listing of the data available:

Report No.	Title	Date
2	Intermediate Reports of Surges and Active Prominence Regions	Oct. - Dec. 1957
3	Intermediate Reports of Surges and Active Prominence Regions	Jan. - Mar. 1958
4	Observations of the Solar Electron Corona	Sept. 1956-Jan. 1958
5	Intermediate Reports of Surges and Active Prominence Regions	Apr. - June 1958
6	Intermediate Reports of Surges and Active Prominence Regions	July - Sept. 1958
7	Intermediate Reports of Surges and Active Prominence Regions	Oct. - Dec. 1958
8	Intermediate Reports of Surges and Active Prominence Regions	Jan. - Mar. 1959

IGY SOLAR ACTIVITY REPORT SERIES (Continued)

Report No.	Title	Date
9	Intermediate Reports of Surges and Active Prominence Regions	Apr. - June 1959
10	Intermediate Reports of Surges and Active Prominence Regions	July - Sept. 1959
11	Intermediate Reports of Surges and Active Prominence Regions	Oct. - Dec. 1959
12	McMath-Hulbert Observatory Working List of IGY Flares	July 1957 - Dec. 1958
13	Indices of the Solar Corona	July 1957 - Dec. 1959
14	Flare Index for Each Day of IGY Based on McMath-Hulbert Observatory Working List of IGY Flares	July 1957 - Dec. 1958
15	McMath-Hulbert Observatory Working List of Flares and Daily Flare Index	Jan. - Dec. 1959
16	Observations of the Solar Electron Corona	Feb. 1958 - Dec. 1960
17	National Bureau of Standards List of IGY Flares with Normalized Values of Importance and Area	July 1957 - Dec. 1958
18	McMath-Hulbert Observatory Working List of Flares and Daily Flare Index	Jan. - Dec. 1960
19	Intermediate Reports of Surges and Active Prominence Regions	Jan. - Dec. 1960
20	Intermediate Reports of Surges and Active Prominence Regions	Jan. - Dec. 1961
21	McMath-Hulbert Observatory Working List of Flares and Daily Flare Index	Jan. - Dec. 1961
22	Intermediate Report of Prominence (Filament) Activity	Jan. - Dec. 1962

IGY SOLAR ACTIVITY REPORT SERIES (Continued)

Report No.	Title	Date
23	Solar Radio Emission, Spectral Observations in the Decameter Range	July 1959 - Feb. 1961
24	Listing of Sudden Ionospheric Disturbances	July 1957 - Dec. 1959
25	McMath-Hulbert Observatory Working List of Flares and Daily Flare Index	Jan. - Dec. 1960
26	Intermediate Report of Prominence (Filament) Activity	Jan. - Dec. 1963
27	Occurrences of the Yellow Coronal Line	May 1957 - May 1964
28	Observation of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz	Jan. 1960 - Dec. 1963
29	Normalized Solar Flare Data	July 1955 - June 1957
30	Addenda to Reports of Prominences, 1960 - 1963	Jan. 1960 - Dec. 1963
31	Intermediate Report of Prominence (Filament) Activity	Jan. - Dec. 1964
32	Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz	Jan. 1964 - May 1965
33	Standardized Solar Flare Data	Jan. 1959 - Dec. 1961
34	Observation of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz	June 1965 - Dec. 1966
35	The Daily Flare Index, I_f	July 1955 - Dec. 1961

NASA MANNED SPACECRAFT CENTER CATALOGS

Catalogs of solar activity for the years 1954 to 1963 have been received from the National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas. Data include:

1. Catalog of Major Solar Flares
2. Catalog of Important Sunspot Groups

3. Catalog of Plage Data
4. Catalog of Important Radio Emissions from the Sun
5. Catalog of Geomagnetic Storms
6. Catalog of Solar-Terrestrial Effects
7. Catalog of Important Balloon Flights
8. Chronological Catalog of Major Solar Events

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OBSERVATORY/STATION:
FORM OF DATA:*
TIMESPAN:
ADDITIONAL SPECIFICATIONS:

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